

OHIO

Special Round-up on the Ohio Turnpike

Contractors and Engineers

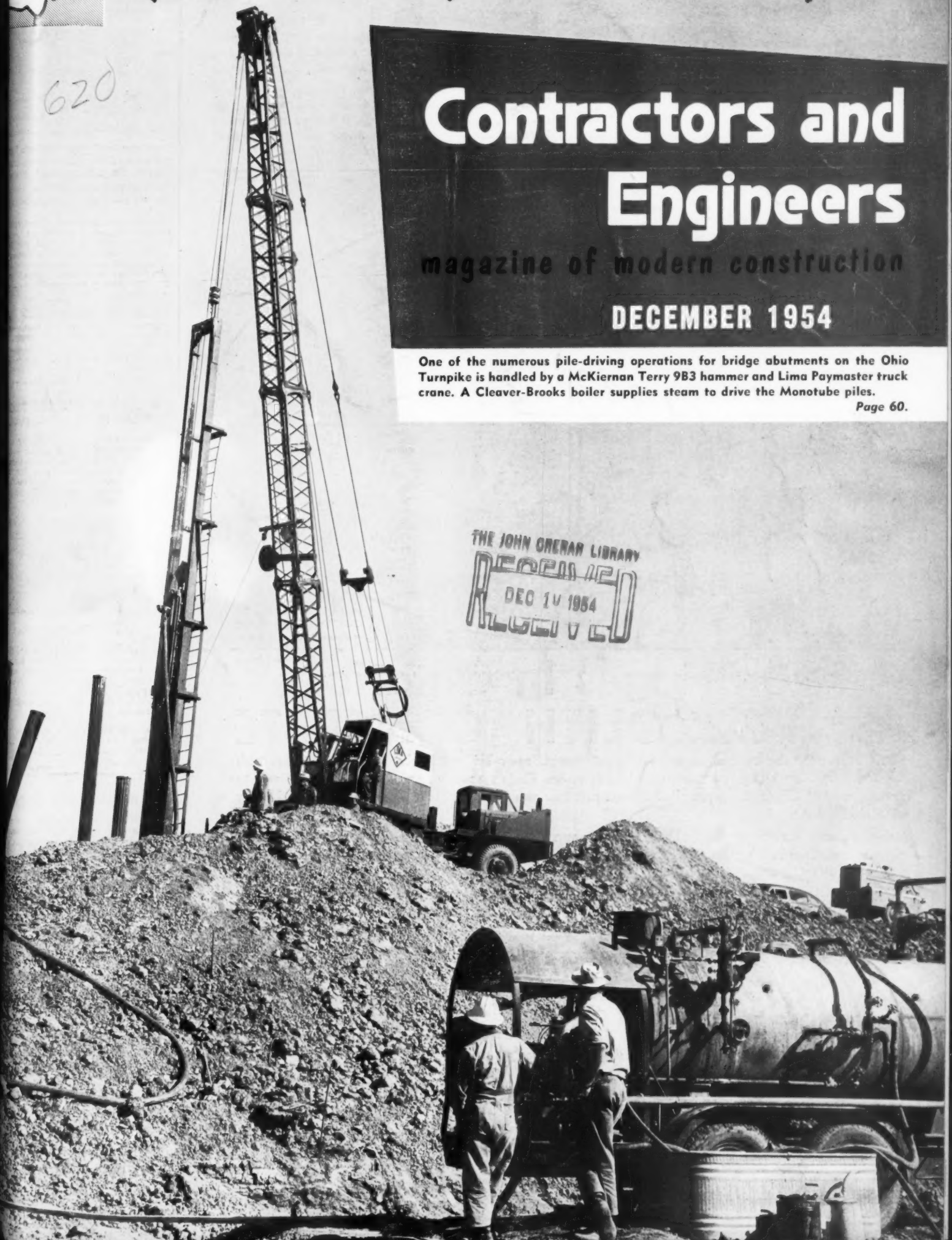
magazine of modern construction

DECEMBER 1954

One of the numerous pile-driving operations for bridge abutments on the Ohio Turnpike is handled by a McKiernan Terry 9B3 hammer and Lima Paymaster truck crane. A Cleaver-Brooks boiler supplies steam to drive the Monotube piles.

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How Concrete of Required Workability Can Be Obtained Most Economically

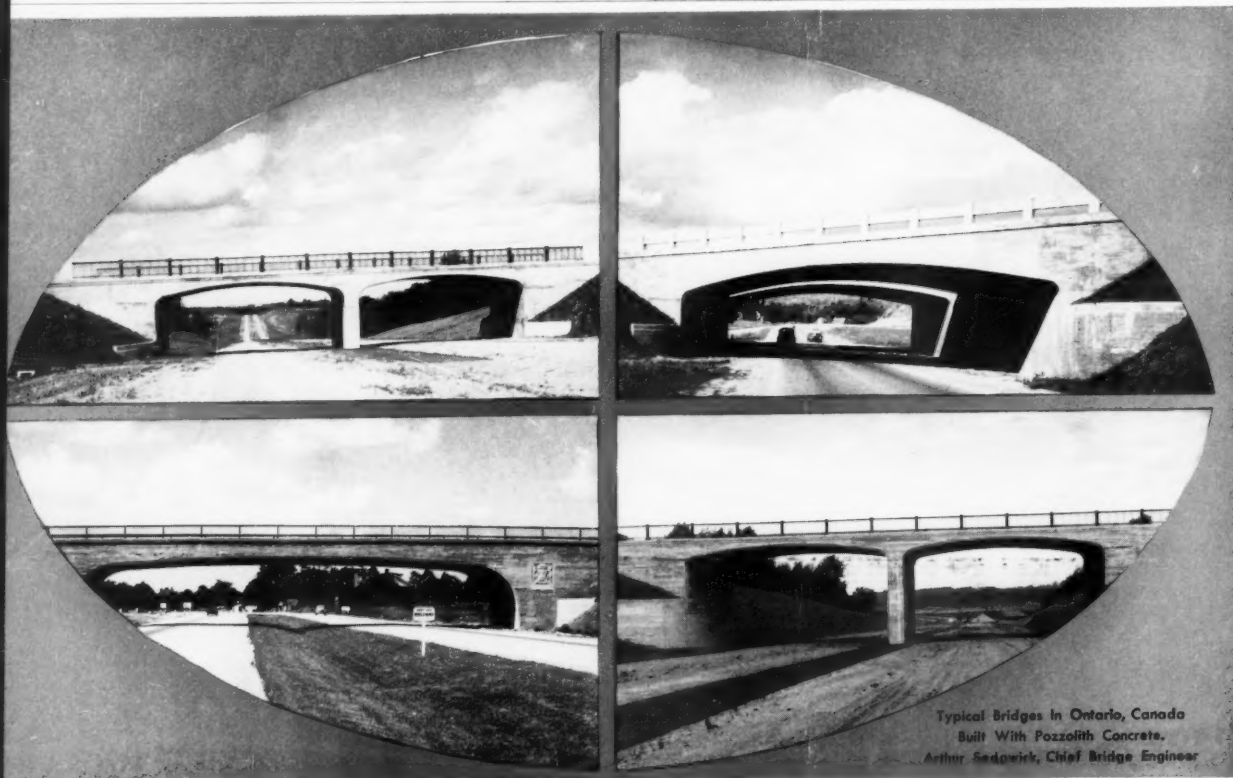
As every concrete man knows, obtaining increased workability by adding water has two serious disadvantages. First, it increases the cost of the concrete because more cement is required to maintain strength. Second, it lowers the quality of the concrete because it increases shrinkage and permeability and decreases durability.

Experience on thousands of jobs has proved that the best and most economical way to obtain required workability is with Pozzolith. When Pozzolith is added to a plain mix, slump is

increased 150% or more.

For equal slump, approximately one gallon (15%) less water per sack of cement is required for a Pozzolith mix. Materials cost is lower . . . plasticity is improved . . . less time is required for placing and finishing.

In addition to producing required workability most economically, Pozzolith reduces shrinkage, lowers permeability and increases durability, because it lowers unit water content (water required per cubic yard of concrete).



Typical Bridges In Ontario, Canada
Built With Pozzolith Concrete.
Arthur Sedowick, Chief Bridge Engineer

90 Bridges In Ontario Are POZZOLITH CONCRETE

BACK in 1938 the Ontario Highways Department built two bridges of identical design — one with Pozzolith Concrete, the other with plain concrete. Their reason for employing Pozzolith was to increase workability, making practical the use of a low water-cement ratio concrete in a thin, heavily reinforced section.

Such marked improvements were obtained in the concrete produced with Pozzolith that since that time, with the exception of an interval during the war years, all highway department bridges in Ontario have been Pozzolith Concrete.

In other provinces and in many states, Pozzolith Concrete has similar acceptance for use in highway bridges.

Among the improved qualities obtained with Pozzolith Concrete are the following:

- GREATER DURABILITY — for longer life concrete
- REDUCED SHRINKAGE — for less cracking
- LOWER PERMEABILITY — for less "waterproofing" expense
- MINIMIZED SEGREGATION — for better appearance
- INCREASED BOND-TO-STEEL — for better construction
- EASIER PLACEABILITY — for lower placing costs

Full information on Pozzolith and "See-for-yourself" demonstration kit supplied on request . . . without cost or obligation.

The MASTER BUILDERS



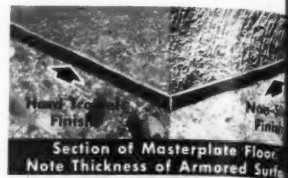
CLEVELAND 3, OHIO • TORONTO, ONT.

Subsidiary of American-Marietta Company

Cable Address, Mastmethod, New York

"IRON-CLAD" CONCRETE FOR HEAVY TRAFFIC AREAS

The Masterplate "iron-clad" concrete floor is 4-6 times more wear-resistant than the plain concrete floor, also corrosion-resistant, spark-safe, easy-to-clean, non-slip, non-dust and economical. Non-colored and colored.



Experience in all types of plants has proved the value of Masterplate "iron-clad" concrete floors in helping to maintain a smooth flow of production, reduce maintenance expense and improve plant safety.

Only with Masterplate can a Masterplate "armored" concrete floor with all its important service advantages be obtained. This is because only Masterplate contains the cement-dispersing agent calcium lignosulfonate which makes it possible to easily float a pound or more of the tough, ductile metal on fresh concrete and keep it at the surface.

Full information on Masterplate—for new floors and resurfacing old concrete floors—and "for-yourself" demonstration kit supplied on request by the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

COLORLED CONCRETE FLOORS FOR LIGHT TRAFFIC AREAS

Colorcon is being widely used by contractors to obtain uniformly colored, long wearing concrete floors for show rooms, churches, schools, apartments and offices; also for recreation rooms, patios, driveways, sidewalks, lawns, ways and garages. Floors can be scored to desired pattern.



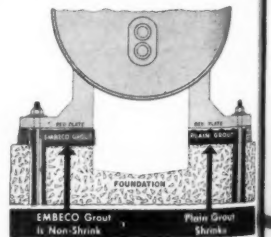
Color Plus Long Wear

Colorcon floors cost less additional than painting the floor, outwear the best plain concrete floor, and have more uniform and more intense color than is obtained from the use of pigments put in the mix. Colors: light grey, grey, red, brown, black, green, dark green, non-colored.

Full directions for the use of Colorcon may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

FOR NON-SHRINK GROUTING

To avoid shrinkage—principal cause of failure in equipment grouts—plant engineers use Embecco metallic aggregate, the material that produces a non-shrink flowable grout.



Cross-section shows how an easily flowable Embecco Grout counteracts shrinkage to produce full contact with bedplate.

Following are a few of the many other uses of Embecco non-shrink mortar: grouting of bolts; grouting steel floor grids; grouting around pipes through walls; caulking bell spigot pipe; patching floors, ramps and forms.

A 16-page booklet of useful data and information on the Embecco Non-Shrink Method of Grouting may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

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Contractors and Engineers

magazine of modern construction

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DECEMBER, 1954



EDITORIAL

Turnpikes Test Public Relations

Selling highways to the public is usually not a major consideration of the highway planner or builder. Improvements are made according to public demand and established usage. But this is not the case with toll roads or turnpikes, since these routes are selected on the basis of engineering feasibility and economic potential. This means that the facility must be sold to the potential users.

Turnpike authorities are agencies of the states and subject to the will of the people. Consequently the turnpike construction program may depend on effective public-relations programs which will counteract the publicity of opposition groups.

The ever-present need for speed in turnpike work leaves little time for personal visits with land owners or local groups before the right-of-way is obtained and construction begins. Consequently, the turnpike authority,

the design engineer, and the contractor must conduct continuing public-relations programs during the design and construction periods.

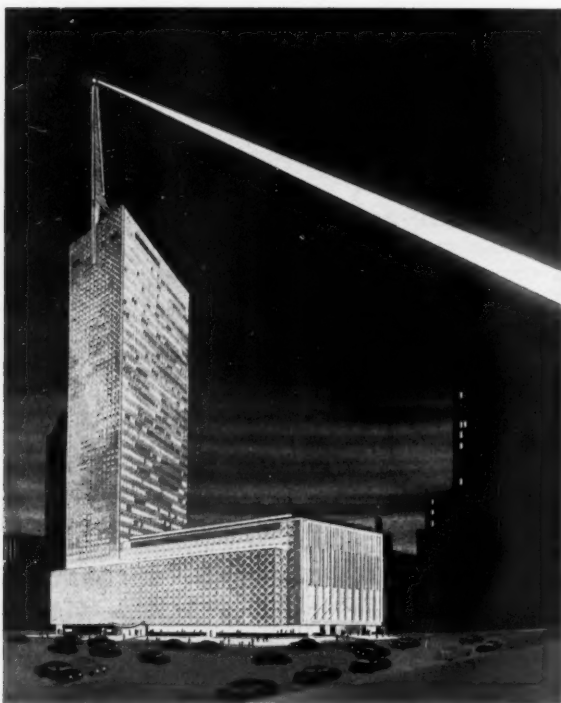
The importance of this second phase of public relations is being clearly demonstrated on the Ohio Turnpike. The Turnpike Commission's public-relations staff has responded to every invitation to talk about the project before service clubs and other groups. News releases and pictures have been supplied to newspapers and radio and television stations. An attractive display prepared for use at the Ohio State Fair this year proved so popular that it has since been on display continuously in the lobbies of some of the state's larger hotels.

Most of the efforts of the public-relations staff, however, have been aimed at the people living along the right-of-way. In spite of all the efforts of the Turnpike Commission, it was

not possible to satisfy all the people along the route. Contracting design engineers and the construction contractors, whose primary goal was to get a road built and ready for traffic in the shortest possible time, found that they had to carry out the public-relations program or be faced with continual bickering and delays. It was not always easy to get a property owner on the right-of-way to realize that the design engineer and the contractor had not selected the alignment. It took diplomacy to convince these people that the contractors and engineers were businessmen who had contracts to fulfill.

This need for a continuing program of public relations represents a challenge which owner-agencies, engineers, and contractors must meet in order to maintain the good will of the people and secure their support for this type of project.

NEWS AND VIEWS



An artist's conception of the \$25 million Republic National Bank Building which opened the first of this month in Dallas. The 40-story building—the tallest in Texas—is faced with aluminum panels and is surmounted by a 150-foot tower with a rotating beacon visible for 120 miles.

Optimism is the keynote on which 1954 is ending. Construction work being done, under contract, or contemplated provides a sound basis for the good outlook. Construction has made a good showing this year, but look for government to exert more effort to increase work in 1955.

One of the first steps in this direction will come next month when Congress gets the administration's new economic program—a program aimed at maintaining federal money policies, at using laws to keep construction high, and at increasing road building. Aside from more federal money for the latter purpose, the administration hopes for congressional approval of federal insurance or other guarantees for road bonds. This would back bond issues of both states and private concerns engaged in highway construction.

Such insurance seemed hardly necessary as Maryland recently marketed a \$180 million bond issue for several projects that will keep construction busy. Bidding was so competitive that bonds had to be allotted to buyers. Of the total issue, \$130 million will be used for the Patapsco River Tunnel

under Baltimore Harbor. This, the longest and only double tube outside of New York, represents the state's biggest engineering project.

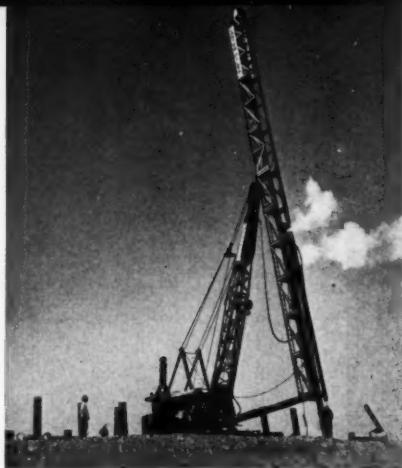
A similar record can be claimed for the \$65 million Hampton Roads bridge and tunnel project in Virginia. The state's hefty contribution to construction scheduled for 1955 includes a 7,479-foot tunnel and two sections of approach bridge totaling 9,450 feet.

The bridge project holding much of the limelight in the coming year will probably be the proposed 4,600-foot span across The Narrows between Brooklyn and Staten Island in New York City. A report on this project, along with others included in a joint study of metropolitan New York traffic problems, is due this month.

A \$250 million job that would add considerably to 1955's construction total is the proposed hydroelectric project at Mica Creek, 200 miles inside the Canadian border. Five U. S. power companies, combined as the Puget Sound Utilities Council, hope to build a dam, which would develop 1,200,000 more kilowatts on the U. S. federal dam system on the Columbia River.

A Manitowoc Speedcrane, with a 50-foot boom, 95-foot leads, and a Vulcan No. 1 hammer, drives pipe piles for a bridge abutment.
C&E Staff Photos

Bearing Piles Go Down Fast For Feeder-Route Crossings



In another location on the job, a Speedcrane drives pipe piles on a 6 to 1 batter, also with a Vulcan No. 1 hammer. Air is supplied by the Worthington Blue Brute. Another pile hammer, lashed to the rear of the crane rig, acts as a counterweight.

DRIVING approximately 1,600 feet of bearing pile daily for five bridges on a New York State Thruway feeder road, W. P. Carter, Natick, Mass., used Taylor-Forge thin-walled spiral weld pipe in 90-foot lengths. No mandrel was used in driving. Wall thickness is 3/16-inch and the outer diameter is 12 inches. A total of 41,000 linear feet of the pipe, supplied by L. B. Foster Co., was used in the bridge footings.

The bridges are grade-separation structures on the "Quick Way", a 4-mile road linking Route 17 at the Middletown bypass and the Thruway. The \$4,250,000 feeder road was started June 1, 1954, and construction is expected to be complete by June 15, 1955.

Carter subcontracted pile-driving work for all five bridges from Carlo Bianchi & Co., Inc., Framingham, Mass.

The depth to which piles were driven varied from 20 to 134 feet. Where longer piles were required, they were driven in 90-foot lengths, made of two 45-foot sections. Piles are driven to refusal with 15,000 foot-pounds of impact without damage or distortion of the pipe.

Before pile driving began on one typical footing, a pit 106 feet in length, 9 feet wide, and 15 feet deep had to be excavated for an abutment. This was done adjacent to a rail siding, and walls were protected by a row of steel sheet piles.

A Manitowoc Speedcrane with a 95-foot set of leads handled a 90-foot section of pipe, swinging it over the excavation and lowering it into place.

Once the pipe was in place, it was driven to almost full depth by a Vulcan No. 1 hammer.

To get the full depth of 125 or 130 feet, a second spiral weld pipe section 45 feet long was picked up and placed in position over the section already in place with the aid of a sleeve insert driven into the 90-foot section. Both sections were then welded, and the extended piling was driven to the required depth without damage or distortion.

As each section was driven, workmen were able to fit inserts, and welders secured the next section of piling in a matter of minutes. Time loss due to head trimming or straightening was eliminated. And by coordinating the welding of sections and the welding of points, the welder's time was well spent.

THE END

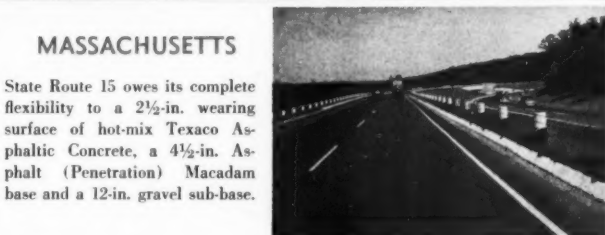
All-flexible Highways

from subgrade to wearing surface



NEW YORK STATE

An example of all-flexible construction on State Route 52. A 3-in. Texaco Asphaltic Concrete Surface was laid on a 12-in. broken stone base, the top 4 inches penetrated with Texaco Asphalt. Underneath is a 12-in. sub-base of gravel.



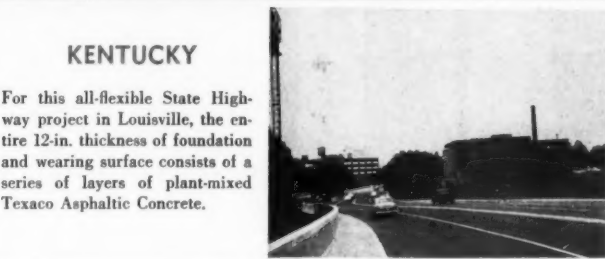
MASSACHUSETTS

State Route 15 owes its complete flexibility to a 2½-in. wearing surface of hot-mix Texaco Asphaltic Concrete, a 4½-in. Asphalt (Penetration) Macadam base and a 12-in. gravel sub-base.



PENNSYLVANIA

To give this section of U. S. Route 122 top-to-bottom flexibility, Pennsylvania employed a 2½-in. Texaco Asphaltic Concrete wearing surface, which is supported by 10 inches of water-bound macadam.



KENTUCKY

For this all-flexible State Highway project in Louisville, the entire 12-in. thickness of foundation and wearing surface consists of a series of layers of plant-mixed Texaco Asphaltic Concrete.

The important advantage of an all-flexible Texaco Asphalt highway is its ability to maintain complete contact with the supporting subgrade at all times. When settlement occurs anywhere in the subgrade, the flexible foundation and surface settle too. Consequently, every square yard of the flexible pavement continuously utilizes the full load-bearing capacity of the subgrade.

In terms of highway performance, this subgrade-to-surface flexibility enables highways of this type to withstand traffic impact years longer, at the same time holding upkeep costs down to a minimum.

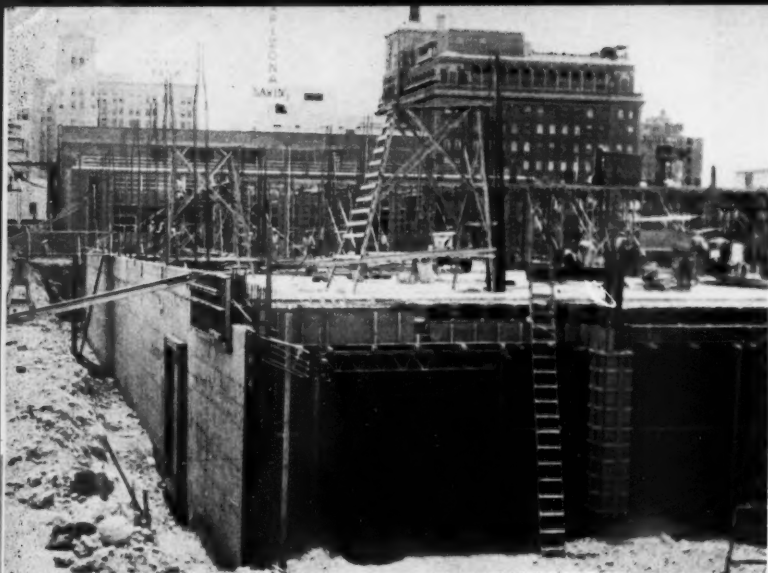
The wearing surface of a flexible-type highway may be one of the plant-mixed Texaco Asphalt types, including Asphaltic Concrete and Sand Asphalt. The foundation, too, may be plant-mixed Texaco Asphaltic Concrete or Sand Asphalt, or it may be Asphalt (Penetration) Macadam.

Helpful information concerning methods and materials used in the various plant-mixed types of Texaco Asphalt construction and Asphalt (Penetration) Macadam is supplied in two booklets, which can be secured without charge or obligation by writing our nearest office. The same booklets also describe low-cost types of asphalt construction which are suitable for secondary roads and streets.



THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York City 17
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TEXACO ASPHALT



Prefabricated steel trusses, doubled and used as a bridge support for the first-floor concrete, permit truck mixers to enter the basement to place concrete. Trucks also carry away stripped forms from the basement while work goes on above.

Forming Method Overcomes Structural Concrete Problems

Bridge of steel trusses supports first-floor concrete, leaving basement clear for fast concrete placing

By RAY DAY

Construction goes on above and below ground simultaneously. Here a floor is made ready for concrete. A number of forming techniques are credited with permitting workmen to place up to 220 cubic yards of material per 5-hour shift.



Turnbuckle aligning devices supplied by Concrete Forms Corp., Chattanooga, Tenn., are installed on forms for the First National Bank of Arizona Building. The devices will hold columns plumb while concrete is placed.

STRIPPING, POURING, and congestion problems in the 263 x 136-foot basement for the First National Bank of Arizona Building in Phoenix were virtually licked when James Stewart Co., Dallas, Texas, called for the use of several patented forming devices on the job. Today, what might have proved an extremely troublesome job has been done with a minimum of difficulty and at minimum cost.

The \$3 million building, one of the largest construction projects in Arizona, is being built for the First Bank Building Corp. of Phoenix and will be the head office for the First National Bank of Arizona. Fronting on Central Avenue and Polk Street, the structure consists of a rigid concrete frame without construction joints. Work on the building began earlier this year, and is scheduled to be finished July 1.

Atop the structure will be a penthouse and a 2½-story sign for the First Bank Building Corp. This will bring the height of the building to 14 stories. The modernity of its aluminum, stone, and glass facade will be in keeping with the rest of the building.

Basement Excavation

Work began earlier this year with

the removal of 30,000 cubic yards of excavation—mostly in dirt—for the 20-foot-deep basement. This part of the job was subcontracted to Arizona Sand & Rock Co., Phoenix, which brought in three Caterpillar D8 tractors with 17-yard scrapers, plus a D8 for pusher use, for the first 4 feet of excavation. As the top layer of material was removed, it was stockpiled to one side for later use as backfill.

Following this initial work, a Northwest 80-D shovel and a fleet of 5 to 7-yard dump trucks began working in the center of the excavation to bring the basement to grade. Excavation here consisted of a mixture of alluvial river-bottom material, ranging from fine sand through gravel to stone as large as 14 inches in diameter. Reaching the required depth, the shovel turned to work first in the southern part of the site, then in the northern section.

Shovel and trucks were loading 2,500 cubic yards of material in 8 hours when two days of rain caused operations to be shut down. Another half-day was lost when a parade congested the entire downtown area of Phoenix and made it impossible for dirt trucks to move. Despite this lost time, the entire 30,000 cubic yards of



With plenty of room in the basement, truck mixers move in to discharge concrete directly to the basement floor. By supporting the first floor with a bridge, the contractor did away with the need for a maze of shoring in the basement.

CONTRACTORS AND ENGINEERS

material was removed between the 8th and 25th of the month.

As excavation proceeded, a six-foot-high plywood fence was being built around the site and a crane and breaking ball was demolishing part of an old two-story building on the north end of the property. A little less than half of this building was left standing for office space.

Forming Applications

Concrete forming began as soon as the Northwest shovel had finished cleaning up one end of the excavation. At first, this work was routine. The job consisted simply of forming and placing the first footings. With the exception of one at the entrance to the building, none of the footings was unusual in size. The large footing—5 feet deep, 30 feet long, and 8 feet wide—required 44 cubic yards of concrete. Economy forms were used for all footings, piers, and basement walls. Forms 2 to 5 feet high were quickly installed around each footing. On the day excavation was finished, the basement was ready for its first concrete.

Although the contractor might have used a number of forms ranging from prefabricated plywood-faced panels to patented forms for the 14-foot-high basement walls, he turned to the latter equipment. A crew, under the direction of a foreman trained in installing Economy forms and furnished by Economy's Los Angeles office, set up the form sections.

To make sure forms would align perfectly, a systematic method of cutting them was set up. The form for the outside of the wall was first set on a leveling timber and fastened to the top of the 14-foot pour. Then 200 turnbuckle aligning devices, manufactured by Concrete Forms Corp., Chattanooga, Tenn., were used on the forms. The devices are simple to use. In this case they were set on 4-foot centers, simply attached to a wood brace, and anchored against the side of the excavation. In some cases, iron pipes were used to permit the devices to be used for pulling as well as pushing. These units speedily and precisely aligned the wall form.

When the outside form had been set, steelworkers came in to place the reinforcing steel, which was supplied to the job by Allison Steel Manufacturing Co., Phoenix. The inner form was then set, again on a timber leveling block, and tied to the outer form. The result was a set of forms so stable that deviation noted did not exceed $\frac{1}{4}$ inch.

Congestion Problem

One of the more serious problems was the possibility that shores required to support the pour on the first floor would congest the basement area. It appeared likely that the shores supporting the pour would make it impossible to reach basement floor pours any other way than by using labor crews and hand equipment, and that the crowded conditions would make it impossible to strip wall forms in the basement.

Then a scheme was developed whereby the east half of the pour on the first floor could be supported by some type of bridging device, leaving a truck road in the basement. Timbers were first considered for the bridge; then the idea was discarded. Finally, the contractor rented pre-

fabricated steel trusses, which were doubled and used to support first-floor concrete.

Not only did the trusses provide adequate support, but they also permitted trucks to come under the first floor and pick up shores and stripped concrete forms. And instead of having to make concrete pours in the basement by buggy—an operation which would involve long hauls—the contractor was able to place concrete directly from truck mixers.

All floors, including the first, were supported by Safway patented steel

shores. Avoiding the use of job-built shores resulted in a considerable saving in this area alone.

Floor Joists and Columns

In constructing the reinforced-concrete street-level floor, it was necessary first to form not only the deck but a series of reinforced-concrete floor joists as well. In this instance, the contractor could have used expensive prefabricated panels made in the carpenter's yard. Instead, 40,000 square feet of special forms, built by Southwest Steel Products, Houston,

Texas, were used. These forms, simply installed and stripped, were shored easily by the Safway devices.

Forming of the numerous large-size columns required also posed a problem which the contractor solved with the aid of Concrete Forms Corp. Many of these columns are 24 inches square and, in the lower floors, are quite high.

These columns were formed with prefabricated plywood form panels secured by clamps and steel ties manufactured by Concrete Forms Corp. The lightweight ties, easily installed



PROFITABLE PRODUCER FOR OMAN on the West Virginia Turnpike

For money-making production on its contract on the West Virginia Turnpike, Oman Construction Co., Nashville, Tenn., relied heavily on rugged yellow equipment. This high-speed, high-capacity 225-HP CAT* DW21 with No. 21 Scraper is one of the units in its line-up. Typical performance: along with another DW21 team and a D8 with No. 80 Scraper, this rig moved about 3500 yards of shale, sand and clay per 10-hour day over hauls of varying distances. Like Oman's other Caterpillar-built rigs, it worked day after day with a minimum of down time. In the background: a D8 with No. 8A Bulldozer.

What's back of the DW21's profitable performance? Among other factors, it's the *only* two-wheel earth-mover designed and built by *one* company, with every part *matched* for maximum efficiency. Its capacity, speeds and power are *balanced* for *big production—loading, hauling, dumping*. For example, its capacity is 20 yards heaped, 15 struck. Its 2.16 m.p.h. in low gear matches push-loading speeds, and its 20.0 m.p.h. in fifth provides maximum practical off-road going. Its power is honest—225 HP at the flywheel that won't "smother" on adverse grades. Other advantages: Good

visibility. A turning radius of 90°. Positive ejection that dumps even sticky materials fast. And hydraulic steering that gives the operator "feel of the road" control, an asset in tight spots and barreling along.

Another asset: Wherever a contract takes you, your nearby Caterpillar Dealer backs you up with prompt service—*on the job*. Ask him to show you performance figures on the fast-stepping, high-capacity DW21. Name the date—he'll demonstrate!

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

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**USE CAT EQUIPMENT
FOR ON-SCHEDULE
PERFORMANCE**



A Whiteman power finisher puts the final touches to the 263 x 136-foot basement floor on the Phoenix bank.

by one man, have no dangerous protruding edges. They hold the columns snugly, preventing any spread or twist. Ties were spaced at 12-inch centers, and one of the special turn-buckle aligning members was placed on the sides of the column to hold the form plumb while concrete was placed.

Rapid Concrete Placement

Placement of concrete in the new building has been unusually rapid. Since the first footing was placed, concrete has gone in at rates up to 220 cubic yards in a 5-hour shift. The forming trick which permitted truck mixers to enter the basement of the building and back to the pouring site helped greatly in establishing high rates of production.

There has been very little crane work. A Lorain Moto-Crane with a 1-yard transfer bucket was used once when the vault walls and deck were placed. From that point on, it was a job primarily for truck mixers, 8 Gar-Bro concrete buggies, a Mixermobile tower, and other equipment. The Mixermobile tower handled concrete up to and including the fourth floor. From that point, a Patent scaffold with a double-hoisting engine was used to take the concrete to the higher floors.

Since much of the concrete is in the form of large open-floor slabs, a considerable amount of steel troweling was done by both a Whiteman and a Mall finisher. Mall vibrators were also used to consolidate concrete pours.

The stripping of forms was well organized. Columns and beam sides were stripped 48 hours after the concrete was placed. The bottom form of slabs, 6 feet or less in span, was removed after 96 hours. The bottom form of the main beams was stripped only when the concrete reached two-thirds of its ultimate strength.

When the building is completed in July, the First National Bank of Arizona will occupy part of the first floor and all of the second floor. Part of the ground floor will be utilized by shops fronting on Central Avenue. The tenth and eleventh floors will be allocated to mechanical equipment. A total of 750 tons of refrigeration equipment will be needed to cool the new building. Electronic start and stop controls will be used on the three automatic Otis elevators to be installed.

Floors three through nine will be leased for office use, and their inter-

iors will be finished according to the wishes of the tenants. Throughout the building will be aluminum windows of a type which can be cleaned on both sides from the interior of the building.

Personnel

Field work for the James Stewart Co. is under the general supervision of Sidney McMullan. Ben F. Morey is assistant superintendent; O. L. Jones, concrete superintendent; and Carl Estill, carpenter foreman. THE END

Chrysler Corp. Division Expands Sales Operations

A fully staffed regional office to assist in the promotion and sale of Chrysler industrial and marine engines has been opened in Los Angeles to serve the immediate area.

Located at the Chrysler Motors of

California plant, Eastern and Slauson Streets, the west coast headquarters will be managed by Frank L. Harris, former sales representative of the Chicago territory.

Details on Jeep Engines Available as Power Units

■ The 4 and 6-cylinder Willys Jeep engines recently made available as complete power units are covered in some detail in a new folder. The literature gives complete engine specifications and also describes the standard equipment and housing of the new Power Giant power units. The data includes horsepower, torque, and fuel-consumption figures.

To obtain this literature write to Willys Motors, Inc., 1015 N. Cove Blvd., Toledo, Ohio, or use the Request Card at page 18. Circle No. 685.

Keep hydraulic systems ALWAYS CLEAN AND RUST-FREE



BEST WAY to keep your hydraulic equipment operating dependably and to prevent unscheduled stoppages is to make your hydraulic medium *Texaco Regal Oil R&O* — the oil that tests prove has more than ten times the oxidation resistance of ordinary turbine-quality oils. *Texaco Regal Oil R&O* keeps hydraulic systems free from sludge, rust and foam — assures top efficiency and low maintenance costs.

Good evidence of this comes from a manufacturer (name on request) of hydraulic equipment used in the operation of bulldozers and tractors. He says:

"... the owner of any hydraulic equipment

TEXACO SIMPLIFIED LUBRICATION PLAN

Only six Texaco Lubricants needed to handle all major lubrication. The Plan reduces lubricant inventory, helps assure proper application, reduces costs. Ask a Texaco Lubrication Engineer for details.

TUNE IN:
TEXACO STAR THEATER
starring JIMMY DURANTE
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on TV Saturday nights.
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broadcasts Saturday afternoons.



TEXACO

CONTRACTORS AND ENGINEERS



THE MOTT HAMMER-KNIFE MOWER can be operated over rough terrain and rubble to shred weeds and stalks and to chop light brush close to the ground. Knives mounted on a steel shaft that rotates about 2,000 rpm do the cutting. Designed for 3-point-hitch tractors, the unit is offered in two models with 4 and 6-foot cutting widths, and is driven from the tractor's power takeoff. For further information write to C. W. Mott, 4015 Eberly Ave., Brookfield, Ill., or use the Request card at page 18. Circle No. 739.

Laclede Steel Opens Plant in Tennessee

The Laclede line of steel products for highway and building contractors is now being produced for customers in the mid-south by the Memphis, Tenn., plant of Laclede Steel Co., St. Louis, Mo.

The new facility, located on the Wolf River, facilitates shipment of steel products to Kentucky, Tennessee, Arkansas, and the northern section of the Gulf States east of the Mississippi River.

Facilities for handling barge shipments of steel from Laclede mills in Alton and Madison, Ill., have been incorporated into the new plant. A separate building houses engineering, sales, and shipping departments, and service facilities for plant personnel. Managing the plant is John Faber.



The new Flomax 10 centrifugal pump with a capacity of 10,980 gph, features a hard mechanical seal said to require no maintenance.

Centrifugal Pump Features Improved Mechanical Seal

■ A new self-priming centrifugal pump rated at a maximum capacity of 10,980 gph has been placed on the market by Marine Products Co., 515 Lycaste Ave., Detroit 14, Mich. The unit, powered by a Wisconsin AKN engine and mounted in a special protective carrying frame, weighs only 151 pounds.

The manufacturer states that the Flomax 10 pump utilizes a new type of super-hard mechanical seal requiring no maintenance. The pump also has the Marine Products open-adaptor construction that allows visual inspection to be made readily. This design provides ample working space and protection to the engine from stray pumpage.

The Flomax 10 is available in cast-iron construction for erosion resistance, and all-bronze construction for corrosion resistance. Of interest is the fact that the loss of engine speed is less than 80 rpm over the entire flow range.

For further information write to the company, or use the Request Card at page 18. Circle No. 788.

Data on Complete Line Of Concrete Vibrators

■ Details on the complete line of concrete vibrators offered by the White Mfg. Co., Elkhart, Ind., may be found in a new catalog available on request. Gasoline-engine-driven models illustrated have vibration speeds ranging from 4,000 to 8,400 rpm, while a variety of electric-motor-driven units have vibration rates of 7,000 to 8,000 rpm.

There is a choice of mountings, including standard swivel base, wheelbarrow, and two-wheel-type barrow.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 717.

Thew Acquires Control Of Dixie Crane & Shovel

Arrangements for the purchase of the controlling stock of Dixie Crane & Shovel Co., Inc., by the Thew Shovel Co., Lorain, Ohio, have been completed. Dixie Crane & Shovel, Harrisburg, Pa., will continue to manufacture and distribute its equipment under the Dixie brand name.

Three officers and directors of the Thew Organization—C. B. Smythe, Waid V. Clark, and Arthur C. Lundgren—are serving as directors of the Dixie company. David Jenkins, president of Dixie, and Benjamin Jenkins will remain on the board.



should use a rust- and oxidation-inhibited oil. I have yet to see one of our units in which Texaco Regal Oil R&O has been used that wasn't clean, free from rust and sludge — ordinary with pump parts, piping, controls all in A-1 condition."

There is a complete line of Texaco Regal Oils R&O, whatever the type or size of your hydraulic equipment... whatever the range of temperatures or operating conditions... there is a Texaco Regal R&O to assure most efficient performance.

For AIR COMPRESSORS, TOO, Texaco Regal Oil R&O

assures better lubrication, better performance. It keeps compressors and lines clean, free from harmful deposits and rust — keeps valves clean and piston rings free for top-efficiency performance.

Texaco Regal Oil R&O is one of the six outstanding products that, under the Texaco Simplified Lubrication Plan, will handle all your major lubrication. A Texaco Lubrication Engineer will gladly give you full information. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

NAMES IN THE NEWS



Emily Brown, the first woman engineer ever named to the North Carolina State Highway Commission.

N. C. Highway Commission Names Woman Engineer

One of the few women engineers in the southeast, Emily Brown, has been appointed by the North Carolina State Highway and Public Works Commission to a post in the traffic engineering department. The first woman engineer to be employed by the commission, Miss Brown is at present designing state highway intersections under the guidance of Robert Burch, state traffic engineer. In time, however, she hopes to work in other spheres of traffic engineering such as channelization, parking studies, and signalization.

The daughter of E. C. Brown, division engineer for North Carolina's third highway division, she received her bachelor's degree in civil engineering from North Carolina State College in 1953. This past summer, she received a professional degree in civil engineering with an option in transportation. While at State, she was a member of the student chapter of the American Society of Civil Engineers and the Engineer's Council. The American Society of Women Engineers honored her at their convention in Washington, D. C., last spring.

National Slag Association Elects Dierker President

R. O. Dierker, president of Duquesne Slag Products Co., Pittsburgh, Pa., is the new president of the National Slag Association, Washington, D. C. Elected at the same time as Mr. Dierker were R. K. Plumb, vice president; E. W. Bauman, managing director; and W. S. Shaw, treasurer.

Members of the association's executive committee include C. W. Ireland, L. E. McDermut, A. W. Wood, and G. W. Lanier.

Corps Names District Head For San Francisco Office

Col. John A. Graf last month became district engineer, U. S. Army Corps of Engineers, at San Francisco, Calif. Formerly assistant district engineer at Portland, Ore., Col. Graf succeeds Col. Andrew J. Goodpaster, Jr., who was recently named defense liaison officer at the White House.

Nominate George C. Koss As AGC President for 1955

George C. Koss, current vice president of the Associated General Contractors of America, Inc., was nominated for president of the organization during 1955 at the mid-year meeting of the governing and advisory boards in St. Louis, Mo. Mr. Koss is president of the Koss Construction Co., Des Moines, Iowa.

For vice president, the boards nominated Frank J. Rooney, head of Frank

J. Rooney, Inc., Miami, Fla. Officers of the AGC will be installed for the new term at the 36th annual convention of the organization in New Orleans next March.

Clay Sewer Pipe Group Names Regional Manager

Sherwood Borland has been made regional manager of the Clay Sewer Pipe Association, Inc., Columbus, Ohio, a regional association of the National Clay Pipe Manufacturers, Inc.

Mr. Borland, a registered engineer, has been a field representative for the association since 1951. Former city engineer of Delaware, Ohio, he has also served on the engineering staffs of both Floyd Browne Associates, Marion, Ohio, and Wilber Watson & Associates, Cleveland.

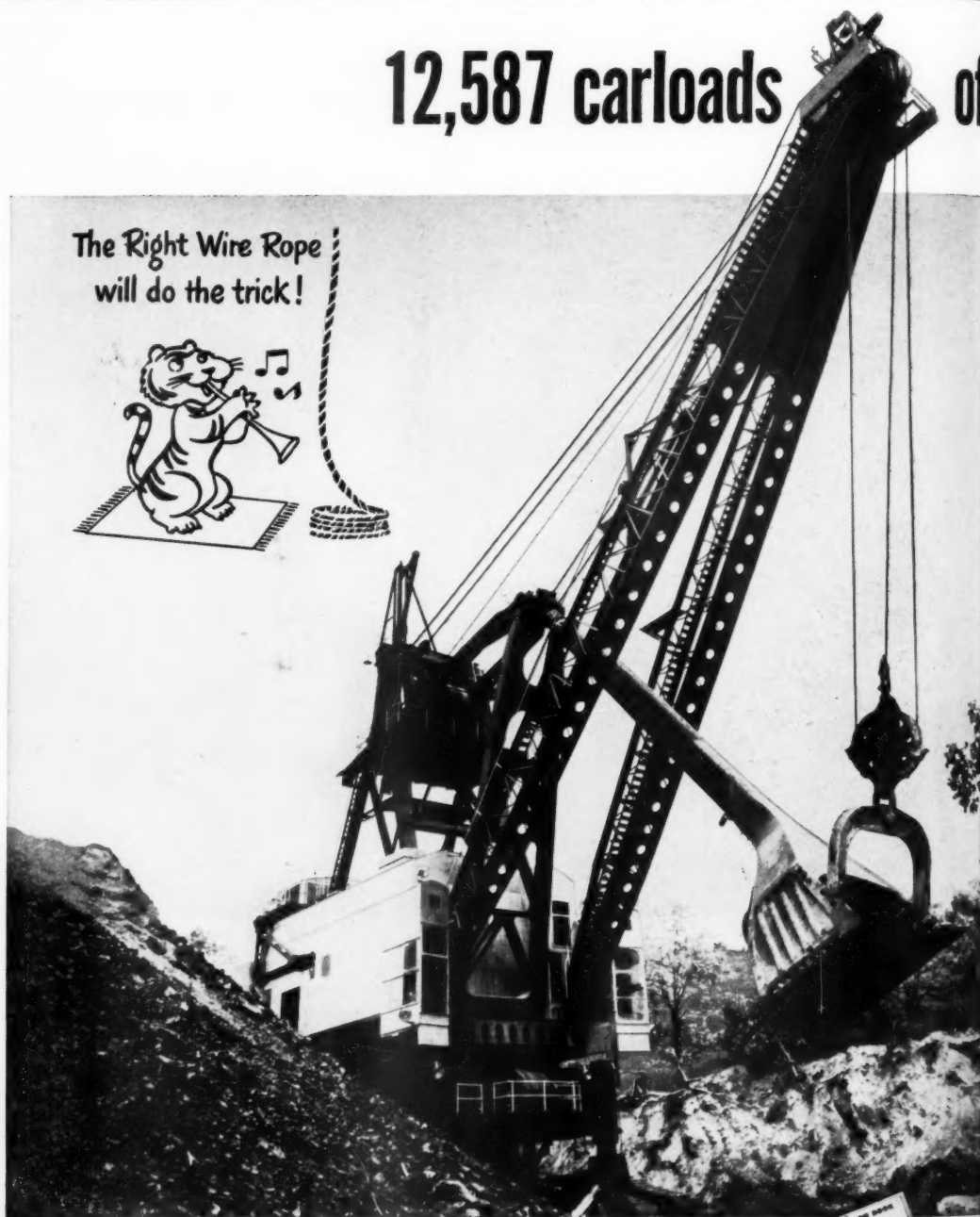
Cone Heads New Institute For Prestressed Concrete

Douglas P. Cone, secretary-treasurer and general manager of Florida Prestressed Concrete Co., Inc., Tampa, Fla., is the president of the newly organized Prestressed Concrete Institute, Inc. This is a nonprofit organization set up on a nation-wide basis for the purpose of improving and extending the use of prestressed concrete. Other institute officers are George Ford, vice president, and Harry H. Edwards, secretary-treasurer.

Mr. Cone served for three years as sanitary engineer in the U. S. Army, and he was with Cone Brothers Contracting Co., Tampa, until this year, when Florida Prestressed Concrete Co. was organized. He holds a civil engineering degree from the Georgia

12,587 carloads

The Right Wire Rope
will do the trick!



American Steel & Wire
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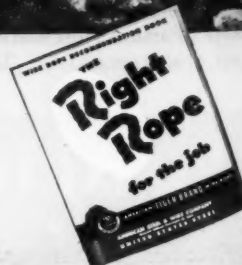
Please send me, without obligation, a copy of your booklet, "The Right Rope for the Job," which lists the correct Tiger Brand Ropes to use for hundreds of typical applications.

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CONTRACTORS AND ENGINEERS



Douglas P. Cone, president of the Prestressed Concrete Institute, Inc.

sociate members. Currently, the group is undertaking three projects: the development of standard prestressing specifications; a fire test on standard prestressed concrete and floor slabs; and the standardization of bridge beam sections. Future projects planned include the standardization of various prestressed concrete products and a research program on the use of lightweight aggregates for prestressed concrete.

Hoover Medal Awarded To Alfred P. Sloan, Jr.

One of the highest awards in engineering, the Hoover medal, was presented to Alfred P. Sloan, Jr.,

chairman of the board of General Motors Corp., at the annual dinner of the American Institute of Consulting Engineers in New York's Hotel Waldorf-Astoria.

The Hoover medal, awarded for "distinguished public service" was first presented to Herbert Hoover in 1930. Since then, it has been presented to only 14 outstanding engineers. Mr. Sloan's selection as the 1954 recipient was made by a board composed of representatives of the national societies of civil, mining, mechanical, and electrical engineers.

In addition to serving as chairman of the board for General Motors, Mr. Sloan is a member of the financial policy committee, one of the corporation's two top governing committees. He is also president of the Alfred P. Sloan Foundation, an organization promoting education and research.

Road Federation Names Man of the Year for 1954

The International Road Federation, Washington, D. C., has selected T. J. Mahoney, Hamilton, Ontario, "Man of the Year" for 1954. The citation, given annually by the federation to a leader in highway and highway-transportation development, was presented to Mr. Mahoney at the 35th annual convention of the Canadian Good Roads Association in Toronto last month.

Mr. Mahoney was chairman of the Hamilton-Wentworth Suburban Roads Commission for 36 years, served as a member of the Highway Advisory Board of Ontario for ten years, and has been a member of the Ontario Good Roads Association since 1914. He is managing director of the latter organization, and honorary secretary of the Canadian Good Roads Association.

National Safety Council Appoints General Manager

Maj. Gen. George Craig Stewart last month took up his duties as general manager of the National Safety Council, Chicago, Ill. This new post in the accident-prevention organization was created to meet the need for increased attention to highway safety.

Until October, Gen. Stewart was director of the Office of Military Assistance in the Office of the Secretary of Defense. He was a member of the War Department General Staff in World War II, serving in the transportation corps. Before serving as assistant division commander of the 10th Infantry Division in the Korean conflict, he was commanding general of Ft. Eustis, Va.

Twin Disc Appointments

Three sales department appointments have been made by the Twin Disc Clutch Co., Racine, Wis., manufacturer of industrial friction and fluid drives for construction equipment.

R. C. McRoberts is assistant sales manager for the hydraulic division; J. B. Schubeler is manager of export sales; and E. H. Bennett is district manager for the Dallas, Texas, branch.

Before his promotion, Mr. McRoberts was sales engineer and service engineer in the hydraulic division. He will have headquarters at Rockford, Ill. Mr. Bennett replaces H. A. Davis in the Dallas post. Before his present appointment he was district manager of the branch in Newark, N. J.

U. S. Steel Promotions

The United States Steel Corp., New York, N. Y., has appointed James C. Gray as vice president in charge of the company's coal mining operations and Philip W. Chase as assistant vice president in charge of raw materials.

Mr. Gray, who will head mining operations in Pennsylvania, West Virginia, and Kentucky, succeeds Karl L. Konnerth, who resigned last month. Gray has been with U. S. Steel since 1937. Mr. Chase takes the place vacated by H. D. Moulton, who was recently elected president of U. S. Steel Homes. His former position of director of exploration and planning is being filled by August J. Breitenstein.

of overburden moved with one Tiger Brand Hoist Rope

IMAGINE 12,587 50-ton freight cars strung out end-to-end. They would make a train more than 80 miles long; and if each car was level full, the entire train would contain 1,000,000 cubic yards of material. That's how much overburden this big coal stripping shovel moved with one American Tiger Brand Hoist Rope.

Despite hard digging, a 2 3/8" Tiger Brand Wire Rope lifted and lowered the fully loaded 45 cu. yd. bucket 20,000 times before it had to be replaced. This equipment is used by Central Ohio Coal Company which supplies coal for The Ohio Power Company's new Muskingum River electric power generating plant. This company also uses Tiger Brand Wire Rope on its 18 cu. yd. shovels.

You will like Tiger Brand, too. It lasts long in any type of service.

Send the coupon for our recommendations of the right rope to use on your machines.

This 18 cu. yd. electric shovel and the 45 cu. yd. job shown on the opposite page are stripping overburden 3 shifts a day every day at Central Ohio Coal Co.'s big Muskingum Mine near Zanesville, Ohio. Tiger Brand Rope is giving excellent service on both these hard-working machines.



Regular lubrication of sheaves helps prevent excessive wear of the Tiger Brand Ropes on these big machines.



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GENERAL OFFICES: CLEVELAND, OHIO

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U.S.S. AMERICAN TIGER BRAND WIRE ROPE

Excellently Preformed

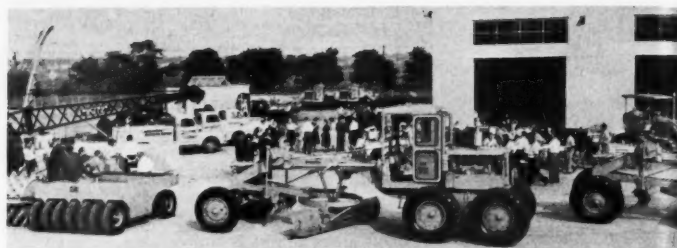
UNITED STATES STEEL



DISTRIBUTOR DOINGS



Approximately 1,500 persons visited this fifth and newest Penn plant, at Westbury, Long Island, on its first day of operation.
C&E Staff Photos



Caterpillar, Bucyrus-Erie, and other makes of machines are demonstrated outside the new plant by equipment operators. Cutaway exhibits and construction films were also shown on opening day.

Equipment Demonstration

Aids H. O. Penn Open

BLACK INK on the books of the newest H. O. Penn Machinery Co. plant in Westbury, Long Island, N. Y., can in some part be credited to the astute showmanship and business know-how which went into preparations for opening day at this plant. For in addition to a variety of showroom displays, officials had Caterpillar, Bucyrus-Erie, and other equipment demonstrated in the area outside the building.

The centrally located plant is on a 4½-acre site at 1561 Stewart Ave., and is the fifth H. O. Penn Machinery office to go into operation. Aside from the main office and warehouse in the Bronx, there are New York plants at Poughkeepsie and Tuxedo Park, and a Connecticut plant in Newington.

Approximately 1,500 people crowded into the 40,000-square-foot Westbury building on the first day of operation after A. Holly Patterson, county executive of Nassau, cut a ribbon to officially open the plant.

In the service shop area, Caterpillar tractors, rubber-tire scrapers, and Cat tractor shovels were on display. Special cutaway exhibits of a Caterpillar diesel engine in operation, showing the new oil clutch, final drive and pinion, full-flow oil filter,

There's a lot
you can't see...

when you look at a
PAYLOADER®
tractor-shovel.

YOU CAN'T SEE the 34 years of pioneering experience in building hydraulic tractor-shovels — **MORE** experience than all others combined!

YOU CAN'T SEE the millions of dollars of parts and service facilities which more than 300 "PAYLOADER" Distributors maintain for their customers' convenience.

YOU CAN'T SEE that 90% of all the "PAYLOADER" tractor-shovels built in the last fifteen years are still in service!

YOU CAN'T SEE the more than 22,000 "PAYLOADER" units throughout the world — more than all others combined!

YOU CAN'T SEE the quality of hidden parts which are built more carefully, to more rigid specifications and with more "know-how" than any other.

The Overwhelming Preference for "PAYLOADER" tractor-shovels is the result of *proven* performance and customer *satisfaction*. Ask any owner or operator.

For complete information contact your "PAYLOADER" Distributor or write to The Frank G. Hough Co., 762 Sunnyside Ave., Libertyville, Illinois.



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THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY



**Shore
Faster**
WITH
ROOSHOR

(EXTENSION TYPE)

The New Rooshor (with the extension head) gives greater job economy. This fully-adjustable Rooshor—full 4 ft. adjustment—can be used as a flat-head shore, a male-head shore and as an extension shore by merely inserting any length 3/4 x 4 into the steel head. Instantly adjusted to "hairline" accuracy. No pins or screw adjustments to cause needless delays. Wooden upper members permit easy fastening of bracing.

Rooshors and Roos Column Clamps are available for rental with purchase option from warehouse stocks in principal cities. Write for Bulletin 454.

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CONTRACTORS AND ENGINEERS



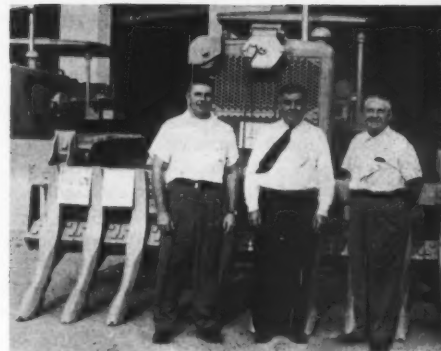
Ralph L. Johnson, president of H. O. Penn Machinery, Inc.



Stuart A. Wade, executive vice president of the company.



E. W. Griffith, manager of the Westbury plant.



First-day visitors standing near this Caterpillar tractor with Fleco rake are, left to right, Frank P. Gerosa; Sylvester "Buddy" Shurtleff, service manager of the Penn Bronx office; and Frank Gerosa, Sr., president of Gerosa Hauling Co.

Operation of machines supplements showroom display films for 1,500 visitors at dealer's new plant

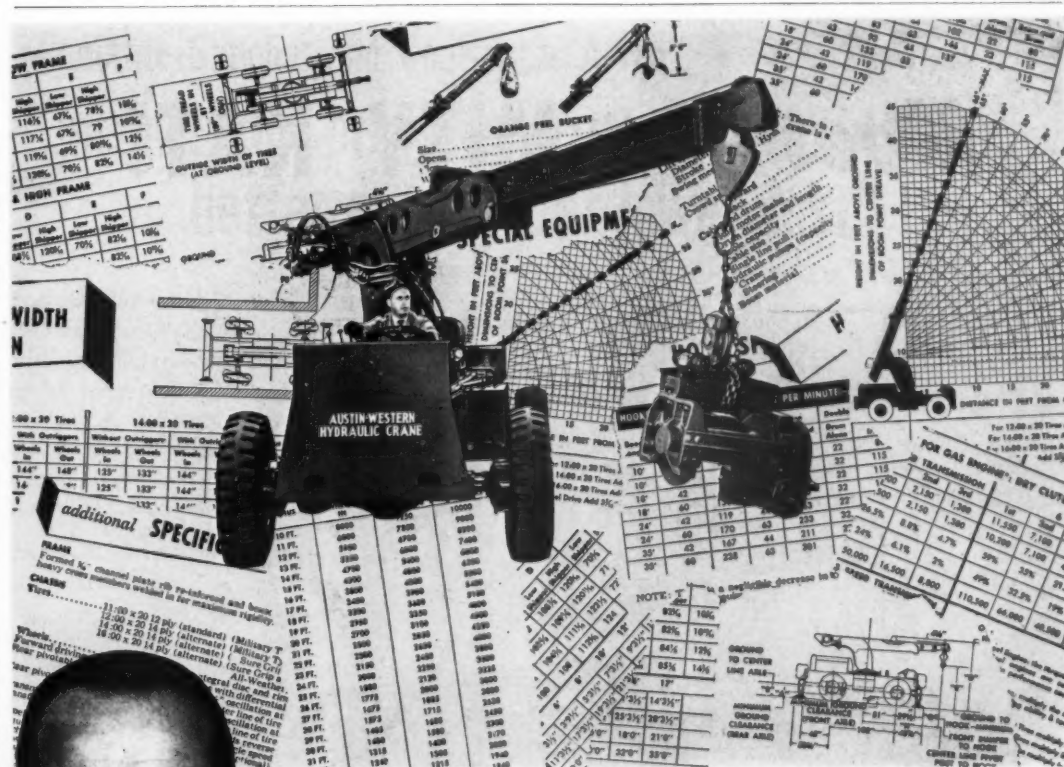
(See following page for additional distributor news)

master pin, sprocket, and track roller, were located in the showroom. Outside, Bucyrus-Erie shovels and cranes, Bros rollers, Athey loaders, John Deere equipment, and a number of machines of other makes were demonstrated by operators.

As visitors were shown through the plant, personnel in the cleaning room, receiving department, and parts department explained the various functions of each section. The parts department, a huge operation in itself, stocks thousands of parts for all machines in the equipment lines handled by H. O. Penn.

Throughout the day, films on construction equipment, land clearing, safety, and outstanding construction jobs were shown. As a final touch, the company scheduled a buffet lunch for people inspecting the plant, and despite the 1,500 visitors to be served, this part of the opening went off as smoothly as the other phases.

Seeing the plant off to a good start on the first day were Ralph L. Johnson and Stuart Wade, president and executive vice president, respectively, of the Penn organization. E. W. Griffith is manager of the Westbury plant, and James Humphrey is service manager. THE END



BEST BUY... PORTABLE HEAT

HY-LO OIL BURNING SALAMANDER

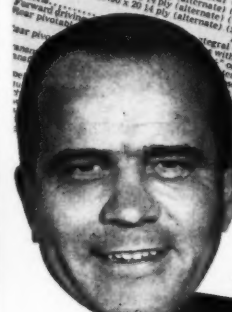
Featuring

- Low first cost and low operating cost
- Requires no skilled attendant
- Trouble-free operation and less cleaning
- 70,000 to 140,000 BTU per hour
- Lights with a match
- One filling lasts 10 to 20 hours
- Burns one-half to one gallon per hour of any good grade fuel oil
- Exclusive damper for quick, easy extinguishing
- Carrying handles for easy moving.

Dealer inquiries invited.

HY-LO OUTSELLS ALL OTHERS

Distributors in all principal cities—
write or wire for nearest distributor.
SCHEU PRODUCTS COMPANY
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take this first step toward SOLVING YOUR MATERIALS HANDLING PROBLEMS

With its telescopic boom, 360° rotation and extra fast boom-and-cable action, the Austin-Western Hydraulic Crane is setting new records... indoors and outdoors... in a wide variety of industries; records made possible by the performance characteristics described in Data Book No. 2253, which "blueprints" such things as: working ranges... boom extensions... minimum aisle widths... tractive effort... towing capacity... special attachments and many other features. Write for your copy today.

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Please send me a copy of Data Book No. 2253 on the Austin-Western Hydraulic Crane.

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Title.....

Company.....

Street.....

City..... Zone..... State.....

(Continued from preceding page)

Detroit Diesel Transfers Western Kansas Dealership

The former Kansas sales representative of the Detroit Diesel Engine Division of General Motors Corp., Detroit, Mich., W. R. Bays, is now a GM diesel distributor in western Kansas.

Mr. Bays has taken over the facilities of Diesel Equipment Co., Wichita and Great Bend, former dealers for the GM division. The dealership will continue at the same locations and under the same firm name.

Assisting Mr. Bays are William Bennett, general manager; William Daniels, sales manager; Robert Abbott, service manager, and C. W. Hamilton, parts manager for the organization.

Longyear Names Dealer

Wortham Machinery Co., Cheyenne, Wyo., is the new sales representative for E. J. Longyear Co., Minneapolis, Minn., manufacturer of diamond core drills and rock and pavement core drills, in the state of Wyoming and in western South Dakota.

Euclid Dealers in Texas

Three Texas distributorships have been set up by Euclid Division, General Motors Corp., Cleveland, Ohio. The dealers will handle sales, service, and parts orders for the earth-moving-equipment firm.

In northeast Texas, Conley-Lott-Nichols Machinery Co., Dallas and Longview, will handle Euclid products. Ingram Equipment Co., with headquarters in San Antonio and

branches in Houston, Corpus Christi, Edinburg, and Austin, will represent Euclid in south Texas. Conley-Lott-Nichols Co. of West Texas, with offices in Lubbock and Odessa, will cover part of west Texas.

A-C Names Three Dealers

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has named three new dealers, two in New York and one in Arizona, to handle its line of equipment.

In New York, Robertson Electric Co., Inc., 126 S. Elmwood Ave., Buffalo, has been appointed to handle A-C pumps in Erie and Niagara counties. The firm, under Hugo K. Jaeger, president, has been distributing transformers, motors, and control equipment for A-C for several years.

The New York City firm of Carleton

Stuart Corp., 237 W. 54th St., will handle A-C pumps in Kings, Queens, Bronx, Westchester, Nassau, Suffolk, Richmond, and New York counties. The firm is headed by M. Kerby Saunders, and J. N. Scanlon is vice president and treasurer.

An Allis-Chalmers distributor since October, 1953, the Vinson-Carter Electric Co., 325 N. Fourth St., Phoenix, Ariz., has been named distributor for A-C control equipment in that state. B. F. Carter heads the firm.

Herd Co. Is Hyster Dealer

Herd Equipment Co., Oklahoma City, Okla., is the new dealer for mobile cranes and material-handling equipment manufactured by Hyster Co., Portland, Ore. The distributor will serve the entire state.

The company has headquarters at 922 N. W. Fifth St., Oklahoma City, and branches in Woodward and Tulsa.

Five Dealers for Hensley

Dealers for dozer and scraper attachments and cutting edges have been named by Hensley Equipment Co., Oakland, Calif. Each dealer will have exclusive rights in its area.

Three California firms appointed by the manufacturer are Holz Co., Ukiah; Westside Tractor & Equipment Co., Willows; and Emerson-Braden Co., Colusa.

Rosholt Equipment Co., Minneapolis, Minn., and Bark River Culvert & Equipment Co., Eau Claire, Wis., are new Hensley dealers in the north central section of the country.

Lima Names Distributors

New distributors for Lima shovels, cranes, draglines, and pull shovels have been appointed in Georgia and Texas. R. S. Armstrong & Bros. Co., 300 S. Slappey Drive, Albany, Ga., will cover the southern portion of that state. The Texas distributor is Fred Berryhill Equipment Co., Inc., P. O. Box 8, Plainview Cut-off Road, Lubbock.

White Names New Dealer

State-wide distribution of asphalt plants, concrete vibrators, trowelers, and kerosene torches made by the White Mfg Co., Elkhart, Ind., is now being handled by Kelbe Bros. Equipment Co., 5686 N. Teutonia Ave., Milwaukee, Wis.

New Warco Dealer

Ross, Young, Dilts Co., Three Bridges, N. J., has been appointed by the W. A. Riddell Corp., Bucyrus, Ohio, to handle its line of Warco motor graders. Complete sales and service facilities will be available from the Trenton, N. J., and from the Three Bridges office.

Automatic Devices Dealer

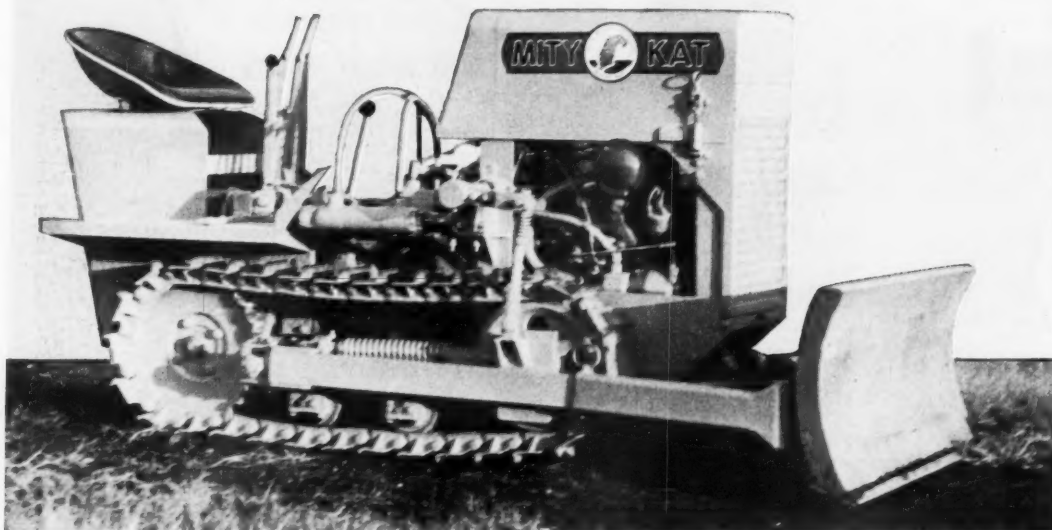
Allied Construction Equipment, St. Louis, Mo., is a newly appointed dealer for Automatic Devices, Inc., St. Louis. The firm will handle the line of Adjustomatic scaffolding made by Automatic Devices.

Heil Names Dealer

Distributing Heil truck bodies and hydraulic hoists in the northeastern section of Tennessee is Knoxville Structural Steel Co., Inc., 301 Morelia Ave. N. E., Knoxville.

CONTRACTORS AND ENGINEERS

Meet the MITY KAT!



New, Powerful, and Easy to Move from Job to Job!

The new Mity Kat tractor and hydraulically controlled angledoxer is one of the handiest machines on any job. A four-cylinder Hercules engine provides plenty of power, yet it's light enough and small enough to travel in a 3/4-ton pickup truck.

The Mity Kat is equipped with a quick-reversing oil clutch which eliminates declutching to change direction of travel. Furthermore, this type of clutch has three to four times longer life than the conventional type of clutch under hard use.

Try the Mity Kat on your next job. Use it for light excavation or grading, in road construction and maintenance, and in trenching, snow removal, or a dozen other purposes. Wherever you need plenty of power in a small package, send for Mity Kat. Write for folder and name of nearest distributor.

DISTRIBUTORS:

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Certain territories
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CONVENTION CALENDAR

January 5-7 Northeastern Weed Control Conference

Meeting, Hotel New Yorker, New York, N. Y. Dr. R. J. Aldrich, secretary, Farm Crops Department, Rutgers University, New Brunswick, N. J.

January 9-13 National Sand and Gravel Association and National Ready Mixed Concrete Association

Thirty-ninth Annual Convention, National Sand and Gravel Association and Twenty-fifth Annual Convention, National Ready Mixed Concrete Association, Miami Municipal Auditorium, Miami, Fla. Vincent P. Ahearn, executive secretary, NSGA, 1325 E St. N. W., Washington 4, D. C.

January 10-13 American Road Builders' Association

Exhibit of Highway Materials and Supplies to be held in conjunction with Annual Meeting, Roosevelt Hotel, New Orleans, La. Norman T. Alquist, administrative services manager, ARBA, World Center Bldg., Washington 6, D. C.

January 11-14 Highway Research Board

Meeting, National Academy of Sciences, Washington, D. C. Fred Burggraf, director, 2101 Constitution Ave., Washington 25, D. C.

January 23-27 Associated Equipment Distributors

Meeting, Conrad Hilton Hotel, Chicago, Ill. P. D. Hermann, executive secretary, AED, 30 E. Cedar St., Chicago, Ill.

January 27-29 Associated General Contractors of Minnesota

Thirty-sixth Annual Convention, Nicolet Hotel, Minneapolis, Minn. R. J. Henderson, manager, 910 Builders Exchange Building, Minneapolis, Minn.

January 31-February 4 American Society for Testing Materials

Spring Committee Week, Netherland Plaza Hotel, Cincinnati, Ohio. G. A. Wilson, senior assistant editor, ASTM, 1916 Race St., Philadelphia 3, Pa.

February 7-9 Association of Asphalt Paving Technologists

Meeting, Jung Hotel, New Orleans, La. Ward K. Parr, secretary-treasurer, P. O. Box 376, Ann Arbor, Mich.

February 14-16 High-Speed Computer Conference

Conference, Pleasant Hall, Louisiana State University Campus, Baton Rouge, La. Dr. J. W. Brouillette, director, General Extension Division, Louisiana State University, Baton Rouge 3, La.

February 14-16 Quality Concrete Short Course

Fourth Annual Short Course, Georgia Institute of Technology, Atlanta, Ga. R. E. Eskew, coordinator of short courses and conferences, Georgia Institute of Technology, Atlanta, Ga.

February 21-24 American Concrete Institute

Fifty-first Annual Convention, Hotel Schroeder, Milwaukee, Wis. William A. Maples, secretary-treasurer, ACI, 18263 W. McNichols Road, Detroit 19, Mich.

March 1-3 Illinois Annual Conference On Highway Engineering

Conference, Illini Union Building, Urbana, Ill. William S. Pollard, Jr., assistant conference director, 303 Civil Engineering Hall, University of Illinois, Urbana, Ill.

March 2-4 Association of Highway Officials of North Atlantic States

Meeting, Hotel Traymore, Atlantic City, N. J. A. Lee Grover, secretary-treasurer, AHONAS, 1035 Parkway Ave., Trenton, N. J.

March 7-11 American Congress on Surveying and Mapping and American Society of Photogrammetry

Consecutive Meetings, Shoreham Hotel, Washington, D. C. Fowler Barker, deputy for public relations for ACSM and ASP, 17 Dupont Circle, Washington, D. C.

March 7-11 National Association of Corrosion Engineers

Annual Conference and Exhibition, Palmer House, Chicago, Ill. A. B. Campbell, executive secretary, NACE, 1061 M&M Bldg., Houston 2, Texas.

March 9-12 American Concrete Pipe Association

Forty-seventh Annual Meeting and Convention, Sheraton-Plaza Hotel, Boston, Mass. Howard F. Peckworth, managing director, ACPA, 228 N. LaSalle St., Chicago, Ill.

Dynamic Testing of Soils Is Subject of New Book

Papers with theoretical and experimental approaches to soil dynamics problems are contained in "Symposium on Dynamic Testing of Soils", published by the American Society for Testing Materials.

Of the twelve papers included in

the booklet, two discuss pressures exerted on soils. One treats the effect of vertical loads exerted on sand and loam, and the other discusses horizontal forces set up in loose granular deposits.

A bibliography of publications on soil dynamics is included at the end of the book. Copies may be obtained from the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., at \$3.50 each.

Portable Earth Drill

■ A gasoline-powered portable earth drill is shown in literature from Soil-test, Inc., 4520 W. North Ave., Chicago 39, Ill. The McCulloch 99 earth drill is an 87-pound self-contained unit that is operated by two men holding the machine. It is available with 6 to 12-inch-diameter augers.

A chain-saw attachment with blades ranging from 20 to 60 inches in length converts the drill to sawing use. Present owners of McCulloch 5 or 7-hp chain saws may obtain the earth drill attachment separately.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 755.

Harnischfeger P&H Units To Be Made in Australia

An agreement between Harnischfeger Corp., Milwaukee, Wis., and Steelweld Pty., Ltd., Sydney, New South Wales, permits the latter to make P&H truck cranes in Australia.

Steelweld, a subsidiary of Industrial Engineering, Ltd., will make the P&H Model 55TC Miti-Mite and the P&H Model 105 TC, the smallest units in the P&H line.

Concrete Supplier and Contractor Agree: "Duraplastic" provides a more workable mix... better results...at lower cost"

CONCRETE SUPPLIER Herbert Kneller, v.p. and general manager of the Ezra Stipp Construction Co., Scranton, Pa., reports: "Our customers show a preference for ready-mixed concrete made with Duraplastic cement. That's why we've used it since it was first introduced. Experience has shown that Duraplastic produces excellent results for almost every type of construction work."

WELL-KNOWN BUILDER D. W. Richardson, president of the R. D. Richardson Construction Co., Scranton, Pa., also recommends Duraplastic. "Duraplastic gives us a more workable, plastic mix," says Mr. Richardson. "This means we get better placing and appearance at lower cost to us."



POURING TRANSIT-MIXED DURAPLASTIC concrete for Bell Telephone Dial Exchange in Olyphant, Pa. General Contractor: R. D. Richardson Constr. Co.; Ready-Mixed Concrete: Ezra Stipp Constr. Co., Scranton, Pa.



WORKABLE CONCRETE made with Duraplastic facilitates placement work in construction of this type. Workmen find it easy to place Duraplastic concrete properly around steel reinforcing.

Many others throughout the building and construction field have learned to count on the advantages of Duraplastic air-entraining portland cement. Duraplastic makes a more plastic, more cohesive, more uniform mix—less mixing water is needed for a given slump . . . segregation and water gain are minimized.

What's more, with Duraplastic you can save on construction time. That's because the greater plasticity of Duraplastic-made concrete is a real aid to faster, easier placement. All these advantages — *plus* improved surface appearance — are yours when you build with Duraplastic.

YET DURAPLASTIC COSTS NO MORE! It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

"Duraplastic" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ATLAS®

DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

Makes Better Concrete at No Extra Cost

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station





George T. McCoy, center, incoming president of the American Association of State Highway Officials, is congratulated by A. E. Johnson, right, retiring president and John A. Volpe, left, the new vice president of the first region, at last month's annual meeting.

AASHO Pledges Cooperation On Federal Road Program

Opening its 40th annual convention with a policy statement praising President Eisenhower's \$50 billion highway-improvement proposal, the American Association of State Highway Officials plunged immediately into action. The meeting, held in Seattle, Wash., November 9-11, was attended by more than 850 delegates and visitors representing 47 states, Hawaii, Puerto Rico, the District of Columbia, Alaska, Canada, and U. S. government bureaus.

Prior to the opening of the convention's general sessions, the executive committee issued a statement tendering "the full cooperation" of the association in assembling data and information needed to formulate a plan of action. The statement of policy continues by stating that funds for the federal-aid secondary, urban, and primary highway systems, less the interstate portion thereof, should be continued in at least the same amounts as at present.

The statement advocated a new program having necessary capital expenditures substantially financed by the federal government, with the states responsible for the design and construction. This would hold the states responsible for the cost of maintaining, operating, and policing the system, which is to be constructed to adequate standards as promulgated by the American Association of State Highway Officials.

Association president, A. E. Johnson, opened the convention with a clear-cut challenge to the delegates to be prepared to handle a greatly expanded highway program without delay. Although the association makes no recommendation as to the financing of the President's program, the delegates were repeatedly urged to examine all possibilities for financing, to obtain all possible preliminary surveys, and to be prepared to put the work under construction with all expediency.

Johnson also warned the delegates that, while mistakes in highway design and financing might have been possibly justifiable in the past, highway officials must not continue to make the same mistakes. Most pressing need for the association, he said, is for physical and economic research to evaluate current theories of design, materials, and methods of financing. The tremendous problem of financing and constructing urban highways, together with the highway-traffic safety problem, must be given increasing attention by the association, Johnson added.

CONTRACTORS AND ENGINEERS



EXCEPTIONALLY SMOOTH accurate control —plus ready mobility—make the 15-B and 22-B Transit Cranes real producers on construction jobs. Here are some of the control advantages that pay off in big output.

BOOM CONTROL IS ACCURATE, RELIABLE with fully independent power boom hoist and power controlled load lowering on the main hoist line.

BOOMS ARE EASY TO SPOT because friction swing brake, in addition to regular swing lock, holds boom exactly where operator wants it.

QUICK, EXACT CONTROL RESPONSES are delivered by direct-connected mechanical

controls. Elimination of all excess weight and excellent machine balance mean fast, smooth swing.

SPECIAL 16-PART SUSPENSION provides slower boom hoisting or lowering for even greater precision in setting steel, etc.

See your Bucyrus-Erie distributor now for full information on the 15-ton capacity 15-B Transit Crane, convertible to 1/2-yard excavator service; and the 22-B Transit Crane, outstanding in the 25-ton capacity, 3/4-yard class.

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This emphasis on preparedness to handle a greatly expanded highway-construction program was echoed in many of the committee sessions during the succeeding days of the convention. The committee on maintenance and equipment heard discussions of the maintenance of high-speed, multi-lane facilities which emphasized the need of scheduling repair work so that there is a minimum of inconvenience and danger to moving vehicles. It was pointed out that this practice might lead to the adoption of some new pieces of equipment capable of getting on the job, doing a maintenance operation, and getting out of the way quickly.

Maintenance By Contract

Mr. C. W. McCaughey, deputy director of the division of operations of the Ohio department of highways, reported to the maintenance committee on the progress being made throughout the country in expanding the scope and volume of maintenance operations done by contract. He pointed out that this practice, practically unknown a few years ago, has now been extended to more than 70 types of operations.

The committee on legal affairs discussed problems of controlled access and highway laws, and the committee on right-of-way placed particular emphasis on the problems of obtaining right-of-ways for both urban and rural freeways.

Addressing the opening day general session, F. V. du Pont, Commissioner of the Bureau of Public Roads, told of the need for research in the field of highway materials. He urged increased cooperation with the chemical industry in the field of soil stabilization. At the conclusion of the session Mr. du Pont announced that he is resigning his post after January 1, 1955, to take over as special assistant in the office of Secretary of Commerce Weeks. C. D. Curtiss, present deputy commissioner, will succeed du Pont as head of the BPR.

The resignations of AASHO Executive Secretary Hal H. Hale and treasurer George H. Henderson were accepted by resolution.

Opening day talks by Congressmen Georgia A. Dondero, Michigan, chairman of the House committee on public works, and J. Harry McGregor, Ohio, chairman of the House subcommittee on roads, emphasized the severity of the urban highway problem and the need for using all road funds for roads.

"Congestion, collision, and confusion," Dondero said, "threaten the very lives of American cities."

Congressman McGregor reminded the delegates that each state is still free to administer its highway funds as it sees best. In speaking before the members, he urged maximum coordination among states and between state and federal agencies to assure development of the interstate system.

At the group meeting of the committee on bridges and structures, the problem of navigation clearances of highway and railroad bridges came up for a round of lively discussion. It was pointed out that the old standards suited to the days of wood-burning steamboats are no longer realistic. Highway builders and railroad companies are often required to spend substantial sums of construction funds to provide movable struc-

tures or unusually high clearances which are not actually required by modern water transportation facilities. Attention was called to the fact that with the wider multi-lane roadways of the freeway type, these additional costs become even more significant.

A resolution adopted at the final business meeting approved drafts of bills proposed to correct the injustices of existing federal laws relating to navigational clearances and related subjects. The resolution further directs the president and executive committee of AASHO to take necessary action to facilitate passage of legislation.

Another resolution is aimed at obtaining federal legislation to exclude right-of-way transactions for highway purposes from the Internal Revenue tax stamp. Clarification of requirements for insurance to protect railroads in joint highway-railroad construction was the subject of a resolution which also requested Congress and the Bureau of Public Roads to return jurisdiction of the allocation of costs of highway-railroad crossing projects to the individual states.

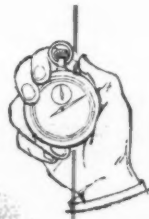
At its concluding session, the convention elected George McCoy, California state highway engineer, as president. Other officers named were: first vice-president F. D. Merrill of

New Hampshire; vice-president first region, John A. Volpe of Massachusetts; vice-president second region, C. R. McMillan of South Carolina; vice-president third region, R. R. Bartelsmeyer of Illinois; and vice-president fourth region, W. A. Bugge of Washington. E. W. Kilpatrick of New Jersey was elected treasurer. Named to the executive committee were A. E. Johnson of Arkansas, M. U. Watrous of Colorado, G. S. Covert of Louisiana, R. H. Baldock of Oregon, and R. M. Whitton of Missouri.

The next meeting of the association will be held in New Orleans, La., during the week of December 4, 1955.

THE END

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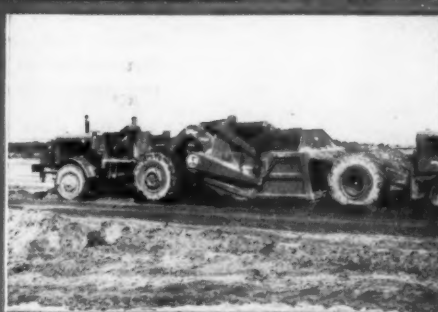
On short hauls as well as long ones—and in all types of material—"Euc" Scrapers move more pay yards per hour because they are easy loading and maintain fast cycle time. They have the power and traction needed for fast loading, high travel speed and for working on steep grades with full payload.

At McGuire Air Force Base in New Jersey, for example, six "Eucs" with 300 h.p. engines and Torqmatic



Drive and scraper have 29.50 x 25 for traction in sandy soil.

Torqmatic Drive utilizes maximum engine h.p. at all times.



Drives average 5 trips per hour on a 3000 ft. one way haul for Tecon Corp. of Dallas, Texas. On another section of this 750,000 yd. runway grading job, the fast cycle time of the Euclid 15.5 cu. yd. Scrapers enabled them to move 265 yds. each per hour on a 2000 ft. haul.

"Euc" Scrapers have struck capacities of 7, 12, 15.5 and 18 cu. yds.—have your Euclid Distributor show you how they can do more work at lower cost per yard on your present or future work.

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Harbor-Construction Firm Cited by New York City

Recognition of its 85 years of dock and harbor construction in the port of New York was awarded to the George W. Rogers Construction Corp. October 20, when New York City

George W. Rogers, center, president of the George W. Rogers Construction Corp., receives an award of merit from Mayor Robert F. Wagner, left, of New York City in recognition of the firm's 85 years of pier and harbor construction in the New York port. At right is New York City Marine and Aviation Commissioner Vincent A. G. O'Connor.

Mayor Robert F. Wagner presented an award of merit to George W. Rogers, head of the New York firm. Another highlight of the day was a press tour by tugboat of pier and harbor installations which make up the city's port.

In presenting the citation for "distinguished and outstanding contribution in marine construction and design," Mayor Wagner paid tribute to the Rogers firm's part in building and improving "the greatest port in the world." Mr. Rogers responded by expressing optimism for New York's future role as the nation's leading sea outlet.

After the award ceremony, held in the Battery office of Marine and Aviation Commissioner Vincent A. G. O'Connor, more than 50 representatives of the press, the city administration, and the Rogers firm boarded the tugboat Dalzellera for a two-hour tour of the New York port. Rogers' projects completed and under construction were pointed out along the way, with other port improvements.

More than \$45,000,000 in improved or expanded public and private dock and harbor facilities along the Manhattan and Brooklyn waterfronts were viewed by the inspection party. Special interest was shown in Pier 86 in the Hudson River, where the United States Lines docks its 53,000-ton liner, the United States. A specially cushioned corner, made of rubber tubes and heavy spliced oak piles, was built by Rogers at the end of the pier to enable the huge liner to dock and sail without regard for the tide. The device has since been installed on other piers by the Rogers company.

Established 85 years ago by George W. Rogers, grandfather of the present owner, the Rogers firm has built and improved numerous piers, docks, and other harbor installations in the New York port. The present head of the firm started as a timekeeper in 1919. He became vice president in 1932, and in 1938 was elected as fourth president of the company.



CUT LOADING COSTS WITH FAST-RUGGED EIMCO'S

Yes! You cut costs when you use Eimcos for loading.

NOTE these advantages:—

Advantage: Eimcos dig and load materials that are difficult or impossible for other loading equipment.

Reason: Eimcos are designed for tough jobs — digging and loading rough, broken rock. Tracks are designed to oscillate freely even with the loader attachment. The bucket design permits digging in frozen stock piles, rough bottoms, heavy ores and in sticky clay or unbroken conglomerate.

Advantage: Eimcos are more maneuverable.

Reason: Eimcos use independent track control. Separate levers control each track and one track can be run forward while the other runs reverse.

Advantage: Eimcos last longer.

Reason: Torque converter drive is standard on Eimcos. All castings are alloy steel, all construction is extra heavy-duty.

Advantage: Eimcos load faster.

Reason: The overhead principle developed by Eimco is faster. Complete cycle is 10-12 seconds. Shifting from high to low on tractor or loader is done in motion. Shifting from forward to reverse can be done at full speed.

Other Advantages Include: Better visibility with the operator up front. Easier maintenance with clutches that never need adjustment and elimination of all clutches, brakes and gadgets in the final drive.

Let an Eimco engineer show you how you can cut loading costs on the next job.



Eimco 105 with bulldozer attachment



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Backed by over 40 years of reliable service, the QUINN STANDARD is recognized as the finest concrete pipe form the world over. Thousands of pipe manufacturers, from the smallest to the largest, look to Quinn for equipment to produce the finest concrete pipe at the lowest possible costs.

• **QUINN HEAVY DUTY PIPE FORMS**
For making pipe by hand methods by either the wet or semi-dry process. Sizes for pipe from 10" to 120" and larger. Tongue and groove or bell end pipe in any length desired. WRITE TODAY for complete information and estimates.

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CONTRACTORS AND ENGINEERS

The Joseph J. Block, pictured here under construction at Falls Bay near Atikokan, Ontario, is the second of the two largest dredges ever built. The "Block" and its sister rig, the Clarence B. Randall, will be used in a huge dredging operation in the Canadian bay.

World's Largest Dredges Built for Canadian Job

The second of the two largest dredges ever built—each has a capacity of 60,000 gallons of water and solids per minute—has been launched in preparation for what is believed to be the largest dredging operation ever undertaken. The job will involve removal of approximately 160,000,000 cubic yards of silt overburden from the basin of Falls Bay at Steep Rock Lake near Atikokan, Ontario.

The twin dredges have hulls 176 feet long, 50 feet wide, and 14 feet deep. Weight without machinery is about 600 tons. Each is powered by a 10,000-hp motor driving a 36-inch pump. The engines weigh 45 tons each.

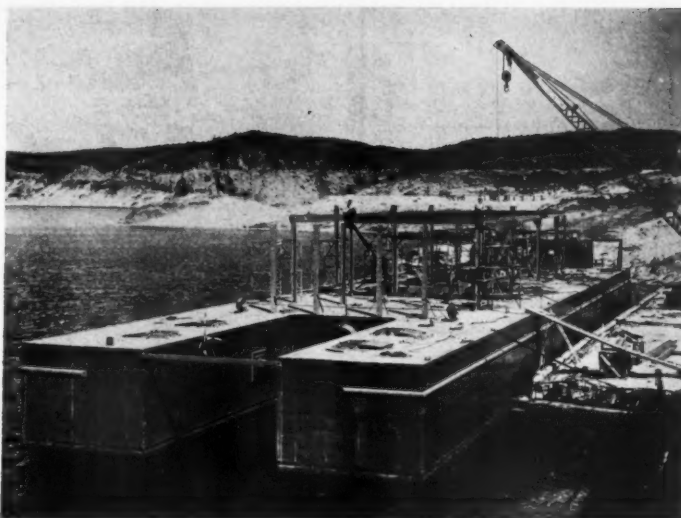
Built by Construction Aggregates Corp., Chicago, Ill., the two big rigs will be operated by that firm for Calend Ore Co., Ltd., a subsidiary of Inland Steel Co., Chicago, Ill.

In the operation at Falls Bay, each dredge will be followed by two booster stations of equal pump capacity. The silt will be moved a distance of 61,000 feet through 36 and 42-inch pipelines. It is estimated that each dredge will move the material at a rate of 5,000 cubic yards per hour or 3,000,000 cubic yards per month. This is equivalent to an individual dredge capacity of 86,400,000 gallons per day.

Blaw-Knox Co. Acquires Grating Fabrication Firm

Outstanding capital stock of the Tri-Lok Co., grating fabrication firm of Pittsburgh, Pa., has been acquired by Blaw-Knox Co., also of Pittsburgh.

The Tri-Lok plant at 55th and Butler Sts. will be operated as a branch of one of the Blaw-Knox divisions. The metal flooring and steel bridge decking formerly made by Tri-Lok will be added to the B-K line of commercial and railroad grating.



Booklet Shows Features Of 93-Hp Motor Grader

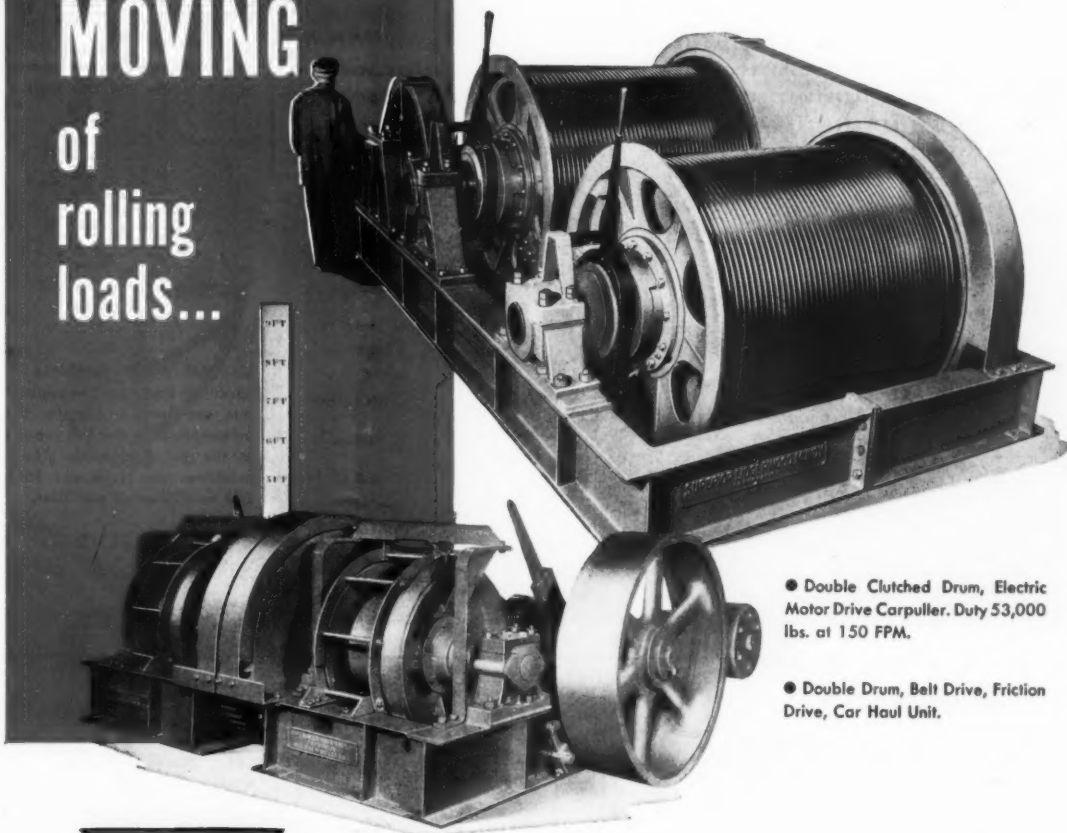
■ Galion's 93-hp motor grader, Model 104, is described in a booklet available on request. Features covered include the hydraulic control system, constant-mesh transmission, and the grader's four-wheel all-gear tandem drive.

Detailed cross-section views are used along with action photos to show the advantages that these features offer for all types of maintenance and construction work. Also described are various attachments that further increase the machine's usefulness.

To obtain Catalog No. 353 write to the Galion Iron Works & Mfg. Co., Galion, Ohio, or use the Request Card that is bound in at page 18. Circle No. 822.

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two special carpullers designed and built to meet specific customer requirements.



● Double Clutched Drum, Electric Motor Drive Carpuller. Duty 53,000 lbs. at 150 FPM.

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Our combined experience of over 200 years enables us to design expertly . . . at the lowest cost to the customer.

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When the Sordoni Construction Co. first started in the building-construction field, the necessity of cost keeping was readily apparent. Only by this means would costs of work be immediately available to permit corrections by supervision. This objective was accomplished by breaking down estimates, using appropriate symbols, and putting on the job a sheet for each symbol. These sheets allowed the general superintendent or any super-

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SORDONI CONSTRUCTION CO. INC.									
FORTY FORT, PA.									
CONSTRUCTION COST REPORT #8									
COST AS OF 110853									
PRODUCED 111153									
CODE ACCOUNT	DESCRIPTION	UNIT DESIGNATION	UNITS ESTIMATED	UNITS COMPLETED TO DATE	ESTIMATED UNIT COST	AVERAGE UNIT COST	COST TO DATE	COST TO COMPLETE	ANTICIPATED TOTAL COST
100	UNDISTRIBUTED COST								
101	SUPERVISION						51131	466369	517500
102	CLERICAL						24583	104717	129300
103	WATCHMAN							150000	150000
104	MOVE EQUIPMENT							100000	100000
105	CONNECTIONS						16483	13517	30000
108	FINAL CLEANING							300000	300000
109	TEMPORARY ROADS							400000	400000
							92197		906800*
200	SITE WORK								
205	BUILDING LAYOUT						5651	4349	10000
230	SANITARY SEWER SYSTEM							27700	27700
							5651		37700*
300	FOUNDATIONS	SQ	35						
301	COMB EXCAVATION	CY	712	750	100	58	43646		43646
302	HAND EXCAVATION	CY	18	18	800	1117	20113		20113
304	BACKFILL HAUL	CY	730	675	100	74	50100	40700	54170
310	FORMS	SQ	60	58	5000	5129	297456	10258	307714
312	KEYWAYS	LF	200	200	80	65			
315	CONCRETE	CY	393	376	200	11			
320	REINFORCING STEEL	T	7	7	8357				
325	RUBBING	SQ	8	8					
330	PAVING	SQ	100	100					

CONTRACTORS AND ENGINEERS



Punched cards containing a record of detailed job items are sorted by symbol and authorization number in Sordoni's IBM department by this IBM 082 card-sorting machine. The machine can handle 650 cards a minute.

The IBM 552 interpreter machine "reads" the perforations in the punched card and prints this information at the top of the card. Sordoni office personnel are trained to operate these machines by IBM representatives.



visor to see how the costs to date compared with the original estimated unit cost on each item. With comparatively few jobs under contract and close supervision of operations, the work could be followed closely and accurate cost data accumulated. By this method, the field organization was also trained to know unit costs and to govern its work accordingly.

Not Far Enough

This method, however, did not go far enough. It pictured only labor and equipment, and these only on the job site. Later, to correct this, the costs for each job were transcribed monthly on a cost statement. But again the system gave control only of labor and equipment, while estimates of material and subcontract costs had to be assumed to be correct. While such steps were in the right direction, they did not give the company the necessary accurate knowledge of all costs in time to control them.

Consequently, eight years ago the Sordoni Construction Co. introduced the International Business Machines system of cost control. This cost-accounting setup, based on IBM daily cost reports, provides a detailed financial study of each building-construction project. These records indicate clearly to the client, the architect, and the contractor the progress of the job and the steps necessary to retain control of expenditures. Moreover, it gives the client confidence in the cost-plus method of construction. By means of this close control, the contractor has strengthened his degree of efficiency and quality of workmanship, thus eliminating all guesswork in cost-wise performance.

How It Works

Immediately after a contract has been authorized, a formal cost statement is prepared from the estimate, using standard symbols. This statement is then forwarded to the IBM department. The symbols are taken from the code analysis of the company's building construction cost report. Thus there is a code number for every description in the source classi-

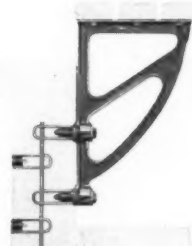
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SUPERIOR

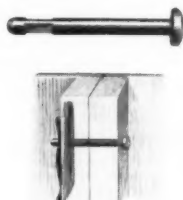
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SNAP TIES



RISERFRAMES



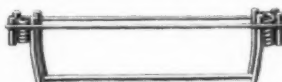
PANEL LOCK BOLTS



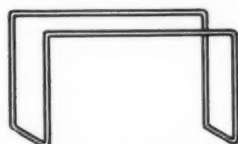
ROD CLAMPS



STANDARD HANGER FRAMES

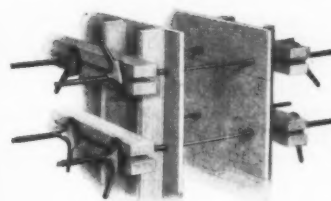


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ADJUSTABLE SCREED CHAIRS



TILT LOCK CLAMPS



STANDARD COIL TIES



CONE-FAST COIL TIES



COIL LOOPS



SCREW ANCHORS AND BOLTS



"PICK-UP" INSERTS FOR TILT-UP SLABS

Shown here are some of the many types of Form Ties, Anchors, and other concrete accessories which SUPERIOR'S years of engineering and field experience plus manufacturing dependability have developed and produced.

Every item in the SUPERIOR line is specifically designed to provide the most dependable and efficient forming method for ordinary foundations, engineering structures, watertight walls and architectural concrete.

When you plan form work, SUPERIOR'S experienced engineers are available to prepare suggested layouts of form work as well as complete estimates and quotations.

For details request copy of our COMPLETE CATALOG

SUPERIOR CONCRETE ACCESSORIES, INC.
4110 Wrightwood Avenue, Chicago 39, Illinois
New York Office: 1775 Broadway, New York 19, N. Y.
Pacific Coast Plant: 2100 Williams St., San Leandro, Calif.

(Continued from preceding page)
fication. The following ten classifications, with numerous breakdowns for each item, are sufficient to cover every possible type of operation or material for the job, ranging, for example, from foria materials under Inventories to machine foundations under Mechanical:

Code	Description
001-099	Inventories
100-199	Undistributed Cost
200-299	Site Work
300-399	Footings and Foundations
400-499	Floors on Fill
500-599	Supported Structure
600-699	Exterior Walls
700-799	Interior Partitions
800-899	Finishes—Specialties
900-999	Mechanical

The cost statement may run many pages, according to the size of the job, and contains a line for every code number used. On these lines across the page are the code number, description, number of units, unit and total cost of each material, and unit and total cost of each labor operation.

At the start of a job, a progress chart is prepared on a standard form and kept up-to-date by the project manager, assistant general superintendent, and job superintendent. Immediately after a contract has been effected, the job is given an authorization number which identifies it. This number is noted on all transactions. Subcontract order forms are issued for all contracts involving labor and material based on plans and specifications, or material made for a specific job on which shop drawings will be required. Subcontracts may be either on a lump sum or cost-plus basis.

For the Record

Purchase orders are issued for all purchases of material. This includes equipment rented from firms other than Sordoni Construction Co. and not covered by subcontract orders. The job superintendent has direct supervision and complete control of the job in the field. He is also responsible for the daily preparation of all information to be forwarded to the IBM department for proper cost keeping.

The timekeeper on the job prepares daily time sheets showing, by symbol, the number of men working, total hours worked, rate and distribution of hours worked. The units of work completed during the day are also noted on the bottom of the daily time sheet. He also prepares a daily equipment time sheet showing equipment numbers, hours used, rate, and symbol charged.

A material report prepared daily by the job office notes the materials received. The report is properly symbolized and the delivery slip is attached. The value is entered on the material report in the Forty Fort office from the actual invoice or purchase order. A weekly material report is made out showing dollar value of all subcontract work completed for the previous week. When an invoice is received, it is checked against the material report and purchase order for price, quantity, and discounts. The material report is the authorization to pass an invoice for payment if all other requirements are satisfactory. A material transfer form is used for the transfer of materials

from one authorization to another for the same client.

To set up a new cost job in the IBM department master cards are punched from the cost statement showing authorization number, symbol, description, units estimated, estimated unit cost, and estimated total cost. As the job progresses and changes in construction take place, the estimate and master cards are revised accordingly through issuance of appropriate change orders.

IBM Daily Procedure

At the close of each day, all jobs forward labor time sheets, equipment time sheets, and material reports to

the IBM department at Forty Fort. The following morning, the department records the information by punching it onto cards which will be processed during the day. All cards are zero-balanced or checked for verification. The labor and equipment cards are multiplied by the calculating punch. The punched cards are then sorted by symbol and authorization number, with the summary cards showing total costs as of two days previous. The figures on these cards are then summarized to obtain new total summaries, which in turn are calculated for unit costs on labor items.

The new summary cards are sorted

with the master cards (estimate), and a complete construction-cost report is produced. Four copies of this report are tabulated daily and distributed as follows: executive copy; project manager copy; job copy; and file copy. All concerned should have in their hands within a day or so, depending on the location of the job, an IBM cost report showing up-to-date costs. Once each week an extra copy is produced and forwarded to the owner and the architect.

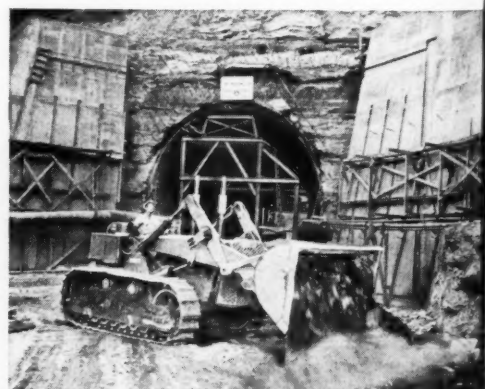
On or about the first of each month, with the aid of IBM reports, a statement is submitted to the owner for advance payment on expenditures estimated for the coming month.



OHIO TURNPIKE. Max Julian, Angola, Indiana, holder of a 1,000,000-cubic yard earthmoving sub-contract, rates INTERNATIONAL way: "My TD-24 powered scrapers can't be beat for production and my 2T-75 high-speed earthmovers are faster, sturdier and haul more weighed yards per trip than any others with the same capacity."



MAINE TURNPIKE EXTENSION. DeMatteo Construction Co., Quincy, Mass., team these three INTERNATIONAL Model 2T-75s with 8 TD-24s with dozers and scrapers to move 1,250,000 cu. yds. of borrow on 9.145-mile Turnpike contract.



WEST VIRGINIA TURNPIKE. Bates and Rogers Construction Co., Chicago, find the INTERNATIONAL TD-18A crawler and 3 cu. yd. INTERNATIONAL Drott Skid-Shovel a great all-around performer constructing 1/2-mile tunnel between Standard and Fairfield, W.

WEST VIRGINIA TURNPIKE. Morrison-Knudsen Co., Inc. and R. E. Mills Company, Cabin Creek, West Virginia, used INTERNATIONAL TD-24 to push-load scrapers on a 9-mile contract on the recently opened West Virginia Turnpike.



NEW HAMPSHIRE TURNPIKE. Leveling fill on the New Hampshire Turnpike is a fast moving job with an INTERNATIONAL TD-24 bulldozer supplying the power. R. G. Watkins & Sons, Inc., Amesbury, Mass., equipment owner.



This applies to advance payment jobs only. Also, by tabulating labor cards punched from time sheets, a weekly payroll register is made for each job.

Through the use of these construction-cost reports, all those directly concerned have a current picture of actual costs. The last four columns on the line of each unit—cost to date, cost to complete, anticipated total cost, and estimated total cost—give the client a clear financial picture of the job. The cost to complete figure for each item is determined by the difference between the cost to date and the estimated total cost, and by the number of units remaining to be completed multiplied by the unit

price already attained by experience on the job. The cost to date plus the cost to complete produces the anticipated total cost. Any variations from the estimate, either under or over, can be investigated immediately. Steps can be taken to correct the situation if possible, and if this is impossible, revisions can be made to keep total costs within the budget.

The entire operation of cost accounting is done by an office staff working under the supervisor of the IBM department. Besides handling the work for the building division of the Sordoni Construction Co., the department also keeps cost control for the line division, which engages in

electric and telephone-line construction for public utilities throughout the eastern part of the United States. The firm's 400 cars and trucks, and some 500 other pieces of equipment such as power shovels, tractors, graders, and the like, are all numbered and have individual income and expense accounts. The IBM expense report shows in detail gas, oil, repairs, insurance, depreciation, and all other items charged against the equipment. A weekly statement shows the profit or loss on each piece of equipment, as well as the total costs.

In the IBM department office on the second floor of the Forty Fort headquarters, six key punch ma-

chines are used to record the field data—labor, equipment, and material reports from the job. This detail is processed onto the familiar 7 $\frac{3}{4}$ x 3 $\frac{3}{4}$ -inch IBM cards. From 200 to 400 cards per hour can be turned out on each machine, depending on the amount of information transcribed. The card is the smallest unit in the system, and each one represents a unit transaction. Punching out a card may be compared to hand posting of an account in bookkeeping.

The five other IBM machines include a 552 interpreter, a 402 alphabetic accounting machine, a 602A calculating punch, a 514 reproducer summary punch, and an 082 card-sorting machine that can handle 650 cards per minute. The machines are rented from IBM's Scranton, Pa., office, which also maintains and services them. As new models come out, the older machines are replaced. IBM also gives the employees basic training in operating the machines, either in Scranton or at Sordoni's Forty Fort headquarters.

Results—Large and Small

The value of the IBM system of daily cost control is reflected in more accurate estimates, the elimination of guesswork in bidding, and the reduction in the number of receiverships or bankruptcies which so often result from loose and haphazard financial controls. The various checks which such a system exercises over a company's operations can also result in savings that add up to a respectable sum.

For instance, a routine IBM statement showed that one company truck was using considerably more gasoline than other trucks. An immediate inspection revealed a leak in the gas line that had escaped scrutiny during previous check ups.

On a recent job an estimate of \$7.35 for the labor of hanging doors and attaching hardware had been made. Three days after some of this work had been done, the job superintendent found—through his IBM report—that the cost of this item was \$9.43 instead of \$7.35. He notified his carpenter foreman, who called together all the carpenters working on doors and told them the job was running over the estimate. "How can we expect to get more work as time goes on," he asked them, "if this condition is not corrected?" With no further prompting they corrected it among themselves.

On other jobs, an excessive number of phone calls has been reduced when this item attracted attention on an IBM statement. Pilferage of materials is discouraged under a system of close controls. Workmen receive recognition for their ability and efficiency when the construction cost reports show that they are doing their job within or below the estimated prices.

The Sordoni Construction Co., through its IBM system of accounting, has achieved closer control than ever before and has been able to strengthen that degree of efficiency and quality of workmanship by which, in forty-four years, it has built a reputation for skill, integrity, and responsibility. The IBM system completely eliminates all guess work and makes for cost-wise operation, thereby proving an invaluable aid to the contractor.

THE END.

IH works on the Superhighways

From pioneering to paving, INTERNATIONAL equipment speeds the nationwide superhighway projects with lower costs and greater contractor profit.

Contractors who build super roads buy INTERNATIONAL equipment for the same reason the general public snaps up Turnpike bonds—IH is a shrewd, safe investment netting top returns.

There's one common characteristic about all INTERNATIONAL earthmoving equipment—it is designed to move more paydirt for less money from start to finish on every job. Best thing is that these operating advantages are available to all contractors—fleet owners and owners of a single tractor, alike.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

Call your INTERNATIONAL Industrial Power Distributor today for full details or an on-your-job demonstration of the IH equipment needed in your operations. You'll be money ahead this year and in the years to come. Besides, you can always depend on prompt, efficient service and genuine replacement parts for your INTERNATIONALS. Wherever your job may be, an INTERNATIONAL Industrial Power Distributor is nearby to serve you on the job, in his completely equipped shop.



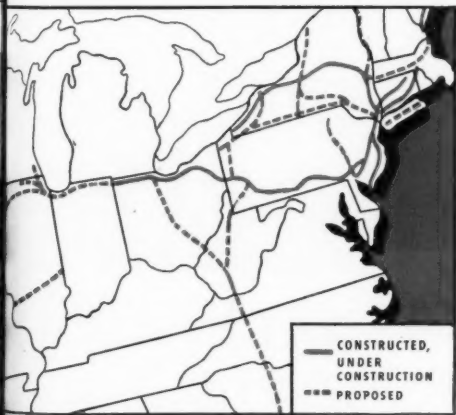
INTERNATIONAL
INDUSTRIAL POWER

MAKES EVERY LOAD A PAYLOAD



MAINE TURNPIKE EXTENSION. Here are five of the eight INTERNATIONAL TD-24s used by Nello L. Teer Company, Durham, North Carolina, shown loading out the fill on one of the firm's prime contracts totaling 13.48 miles on the Maine Turnpike Extension.

PENNSYLVANIA TURNPIKE EXTENSION. J. D. Morrissey, Inc., Philadelphia, uses seven INTERNATIONAL TD-24s, two INTERNATIONAL TD-18As on \$5,385,313 prime contract for 7 $\frac{1}{2}$ miles of the Delaware River extension of the Pennsylvania Turnpike.



This map shows our growing network of toll roads in the eastern portion of the nation with completed projects and those under construction shown in solid lines, and proposed turnpikes appearing in dotted lines.

NEW YORK THRUWAY. D. W. Winkelman Company, Inc., Syracuse, N.Y., uses INTERNATIONAL TD-24 to pull elevating loader that dumps eight haul trucks rolling with 400 cubic yards of fill daily on New York Thruway approach roads.

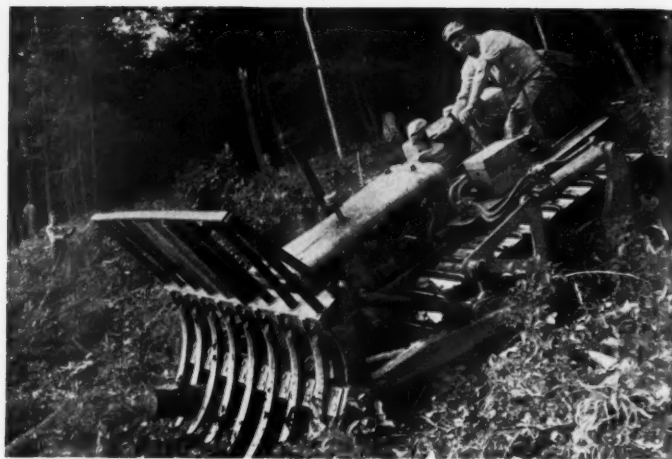


Balanced Ratio of Manpower and Horsepower Speeds Reservoir Clearing Job

SHEER WALLS, rocky swamps, and steep slopes typify the terrain in the Shepaug storage reservoir, an area which Construction Engineering Co. of America, Inc., Danbury, Conn., cleared for the Housatonic River hydroelectric development program, now under way. The success of the contractor's clearing operation is attributed to the maintenance of a necessary balance among men, machines, and management—a balance

which had to be shifted constantly to compensate for varying conditions of the terrain.

The clearing job was finished at the end of last month. The entire \$10 million Shepaug project, scheduled for completion next fall (see "Shepaug Dam Will Provide More Power for Industry", C&E, May, 1954, pg. 8), is being built for Electric Power, Inc., a wholly-owned subsidiary of Connecticut Light & Power Co.



A Caterpillar tractor equipped with a Fleco rake piles cut trees and brush during clearing work on the slopes of the Shepaug Dam reservoir in Connecticut.

CECOA's job was in the 1,870-acre section which will form a new lake covering land in six towns and three counties in the western part of the state. The water will make the Housatonic River back up approximately ten miles to Lovers Leap and about four miles on the Shepaug River to Roxbury Falls Bridge. The impounding basin will also back water up 15 brooks ranging from a quarter of a mile to a mile in length, and some 73

sloughs. The clearing line has a perimeter of approximately 40 miles, and clearing was done to the 210-foot elevation above sea level.

The heavily wooded and rocky hillsides surrounding the valley will provide miles of scenic view. The shoreline of the lake will be 35 miles in length, and the lake surface will be at the 200-foot elevation.

When the contractor moved onto the job, he not only had to contend

**DIG...
LOAD...
FAST!**

Pat. No. 2,669,367

WITH
SMOOTH OPERATING
**SHAWNEE
EQUIPMENT**

**SCOUT
DITCHER**

Digs 12 ft. deep. Various bucket sizes available. Digs under 8 ft. ceiling. Operation smooth and powerful. Easy to install on most all tractors. Removes from tractor in minutes.

SHAWNEE "SPECIAL" LOADER

Down pressure so great, this loader can even lift front wheels off the ground. Removes in ten minutes. Lifts 2,000 lbs. to 9 ft.

**FOR
SNOW
REMOVAL**

¾ Cu. Yd. snow bucket (66" wide) available for Shawnee "SPECIAL" Loader. 1 Cu. Yd. snow bucket (76" wide) available for the "LOADMASTER" Bucket clears wheels for street clean-up.

**SHAWNEE LOADMASTER
with
HYDRO-CLAM**

Working in combination with Hydro-Clam for digging spot excavations, the Loadmaster performs many labor saving jobs. This heavy duty industrial type loader has double acting, oversize hydraulic system. Raising height sufficient to clear average size trucks equipped with sideboards. Bucket capacity is 12 cu. ft. High down pressure enables digging and handling of tough, hard-packed material. Bucket roll-back is provided for handling loose material.

AD #491-A

SHAWNEE MANUFACTURING CO., INC.

1947-M North Topeka Avenue • Topeka, Kansas



**SCRUGGS-VANDERVOORT-BARNEY
SERVICE BUILDING
St. Louis, Mo.**

Contractor:
Frasier-Davis Construction Co.,
St. Louis
Engineers:
Abbott, Merk & Co., New York

126,000 Square Ft. ...spanned with LACLEDE STEEL JOISTS

Framing large areas presents no problem with these light-weight, open-web joists. Here, for example, is the 126,000-square-foot Service Building for Scruggs-Vandervoort-Barney, one of St. Louis' leading department stores. Scheduled for completion in early fall, this is one of many buildings throughout the nation erected with Laclede Straight Chord Steel Joists—the choice of more and more contractors for fast, economical construction.

OTHER LACLEDE PRODUCTS

Multi-Rib Reinforcing Bars • Steel Pipe • Welded Wire Fabric
Form and Tie Wire • Spirals • Conduit • Corrugated Steel
Centering • Electrical Weld and Gas Weld Tubing



LACLEDE STEEL COMPANY

St. Louis, Mo.



As whole trees are pushed along by this Cat, scattered limbs are picked up and swept into the pile. The Hyster winch on the rear of the tractor pulls the Cat back up steep hills.



Now that the underbrush has been cleared away, the operators move in to cut trees with Homelite chain saws. The lake which will be formed by the dam will rise to within 10 feet of the clearing line.

with rocky swamps and sheer walls, but with steep basin walls which were either ledgy or covered with boulders. The slopes ranged from 30 to 50 per cent, and in some places went to 90 per cent. Hundreds of buried springs in the hillsides started seeping through as soon as trees were dropped. Tractors broke through the surface, with the result that large areas of quagmire developed. Cleanup operations costs were high.

Access Roads

Roads existed on the east bank of the Housatonic River and the Shepaug River but, except for a stretch of about a mile, the entire west bank consisted of a steep wall with slopes varying from 30 to 50 per cent which ran straight to the river. G. T. Erickson, president of CECO, piloted a plane over the reservoir site to locate possible access roads to the various work areas. The plane

was also used for taking aerial photographs which were used in planning the work.

Access roads start from a town road about a mile away and run parallel with the Housatonic River. They were put through yards, barn lots, and old abandoned logging trails, and were extended to the clearing line. The work roads in the clearing areas were extended upstream and downstream, and they were made by bulldozers

gouging into the steep banks. These roads were used to haul the equipment, supplies, and men to the work areas.

A well-trained CECO crew, which was then finishing a clearing job in eastern Connecticut for Connecticut Light & Power Co., was shifted to the Shepaug job and enlarged. The members were professional woodsmen, and it was easy to train them to do the high quality of clearing work



Another Leading Contractor Depends on Sturdy, Efficient Cummer Plants for Faster Production, Less Down Time.

HERE'S PROOF...
that Cummer "True Portability"
Increases asphalt plant tonnage
for Extra Profits!

Don Wells, Inc., widely-known contracting firm of Detroit, Michigan, knows from actual experience that the "True Portability" of Cummer Asphalt Plants is an important factor in successful contract bidding.

Cummer Portable Asphalt Plants are true to their name. They are actually portable—easily and economically—and are state-approved. For that reason, Don Wells, Inc., can go after jobs, whenever available, that involve 8 to 10 thousand tons of asphalt. Without a Cummer Portable Plant, this firm might have to pass up such profitable business.

The Don Wells-Cummer Portable pictured here is completely wired, ready to plug in to a diesel generator set. Lifting hooks are installed for speedy handling. Folding legs (for example, on the dryer) fold up to frame, fold down to grade on timber foundation—concrete is not necessary. Note dust-collecting equipment which discharges reclaimed dust into hot elevator.

Like so many other contractors, Wells says that it gets more than guaranteed minimum capacity—thanks to Cummer's exceptionally rugged construction.

A new, fully-illustrated catalog, giving complete specifications on all types of plants with equipment and accessories, is now available. Send for your copy today.

THE F. D. CUMMER & SON CO.
1827 EAST 18th ST. • CLEVELAND 14, OHIO



5 and 6 C.Y. WILLARDS have Positive Control

...TO STOP POUR
...TO START POUR **INSTANTLY!**



A. Charge-mix or discharge lever, B. Main clutch lever, C. Water valve, D. Pump clutch lever, E. Combination throttle and drum brake, F. Ratchet hoist for chute.

... Controls are Centralized

THERE IS LESS SPILLAGE, less trouble placing concrete with a big 5-6 c.y. Willard because the controls are centralized at the rear and because a Willard has a combination throttle and drum brake. You can stop or start the pour in an instant—no spilling, it can pour a cupful or a full load.

Note how main clutch, pump clutch, water valve and drum controls are conveniently located. Here is the truck mixer with the balance for extra large payloads. Drum drive is by Chrysler 6-engine with fluid drive. Has low center of gravity...short wheelbase mounting...and many exclusive features.

See it at your Willard dealer's or write for bulletin.

Manufactured in Los Angeles, California and Galion, Ohio

WILLARD CONCRETE MACHINERY SALES CO., 11700 Wright Road, Lynwood (Los Angeles County), Calif.

WILLARD TRUCK MIXERS

specified for this project.

A regular logging camp, complete with chef, was established near the project since there was no suitable housing available for the men in the immediate area. Dozer operators selected from this group were specially trained to operate the Caterpillar tractors, which were equipped with Hyster winches and Fleco rakes.

Clearing

Clearing was done in several major phases. Undergrowth was cleared by Brushmasters. These portable saws cut the small trees, brush, and vines at ground level. The material was left as it fell, but in places not accessible to tractors it was piled.

Immediately following the brushing crew came chain-saw operators to cut the trees with Homelite chain saws. A two-man Disston chain saw cut the

largest trees. In most cases, trees were dropped in the same direction.

The Caterpillar D7 tractors then proceeded to push the trees into large piles where this was possible. On the steep hillsides, Caterpillar D4 tractors pushed or winched the trees down the hills into piles. It was sometimes necessary for the Cats to use the Hyster winches to get themselves back up the steep hills. This was done by anchoring the cable to the top of the hill so that the winch could assist the tractor to the top. This process was repeated many times.

The stumping operation was carried on simultaneously with the piling work. Stumps were cut flush with the ground and parallel to the slope between the the 210-foot and the 170-foot elevation contour. Below this point, the stumps were cut 18 to 24 inches from the ground.

Pushing or pulling the whole trees over the ground to the piles cleaned up the scattered limbs in the same fashion as if the land were swept by giant brooms. Where terrain conditions made this impossible, the cleanup was done by hand.

Preventing Fires

As the cleared matter was burned, control was afforded by a Hale high-pressure fire pump and some 1,500 feet of 2½-inch fire hose. The connected sections of hose were run across the burning area and above the 210-foot contour line. The pump was kept in the river or brook and hooked to a hose leading to the central burning area.

Whenever it was necessary, the hose was quickly connected to the section which terminated in the area where it was needed. The hose was also used to wash down the slopes above the burning brush, so that leaf fires could not run along the ground or up the slopes. In addition to fire pumps, fire brooms and Indian tanks were placed near the 210-foot contour at regular intervals.

The Housatonic River changed its depth daily due to hydroelectric operations upstream. This unpredictable variation made the work along the river banks very difficult, since rising water carried away some of the fallen trees. These had to be pulled out of the river downstream. The general practice was to attach a cable to the trees, winch them back onto the land, and pile them for burning. When the water was too deep and too cold for the men, a large inflated rubber raft was put into the stream so that men could hook a cable onto the tree or large limb and allow a tractor to winch it onto the bank.

Each crew on this job had an equal balance of Caterpillars. Chain saws, Brushmasters, and other pieces of equipment were allotted to make the most efficient spread for each area. As crews encountered different terrain conditions, the number and type of machines were changed to com-

pensate for work difficulties.

Personnel

Supervising this clearing project was G. T. Erickson, president of CECO, along with the company's chief engineer, W. H. McPheters, and the superintendent, W. O. Shepherd. For Connecticut Light & Power, C. M. MacWilliam, hydraulic engineer was in charge of the project, and Frederic H. Lewis was the inspector.

THE END

Fast End-Bit Replacement For Dozer-Blade Points

■ The Lilco Quick-Change bulldozer end bit has been developed recently by Lillengreen & Co., of Des Moines, Washington, to make it possible to change dozer blade points in 5 minutes instead of the two or more hours



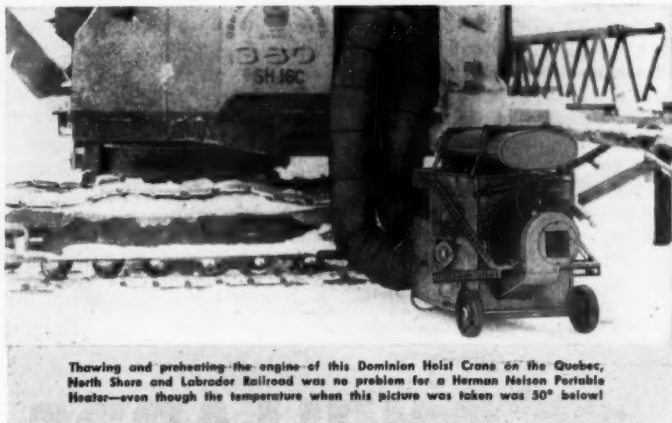
The chief feature of the Lilco end bit is that it can be replaced in a few minutes.

that are usually required.

First, the dull point falls off as the lock-pin is tapped with a hammer. Then a sharp point is slid back on the adapter, the lock-pin is tapped in again, and the new or sharpened point is locked on.

Manufactured of high-alloy steel, Lilco adapters, lock-pins, and points are now available to replace worn and hard-to-change end bits on most standard dozers.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 714.



Towing and protecting the engine of this Dominion Hoist Crane on the Quebec, North Shore and Labrador Railroad was no problem for a Herman Nelson Portable Heater—even though the temperature when this picture was taken was 30° below!

Why does Herman Nelson outsell all other portable air heaters?

Because: indoors or outdoors, Herman Nelson Portable Air Heaters are best for any job.

HERE ARE THE FACTS! Complete safety indoors . . . clean, fume-free, heated air in the working area, with all dangerous gases vented outside!

Maximum efficiency outdoors . . . with flexible canvas ducts channeling heat right to the spot where you need it!

More than 30,000 Herman Nelson Portable Heaters are in use today. Whether you buy, rent, or lease, you'll get the best deal if you see your Herman Nelson Distributor first. FLEET OPERATORS: Ask about our Fleet Users' Replacement-Leasing Plan . . . learn the extra advantages in standardizing on Herman Nelson!



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Best Known Name In

PORTABLE AIR HEATERS

DIVISION OF AMERICAN AIR FILTER CO., INC.
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FREE!
MONTHLY WEATHER
FORECASTING
SERVICE
Better than 85%
accurate over
the past three
years!

HERMAN NELSON
Division of American Air Filter Company, Inc.
Dept. 33, Moline, Illinois
Please send me your monthly weather forecast chart, with
no cost or obligation to myself.
☐ We are in the market for a portable air heater. ☐ We are
not in the market, but would like information for our files.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____

IN A PORTABLE ASPHALT PLANT...

SUPERIOR DESIGN MEANS MORE MONEY

ONE look at THE LITTLE MONSTER... MADSEN's complete asphalt mixing plant on wheels... and you can see why this plant is recognized as the outstanding portable unit on the market today. The superior performance of each component part—designed and built into one overall efficient unit—assures

you of consistently high productive capacity and a more profitable operation. THE LITTLE MONSTER sets up fast. It is complete with 2-compartment feed bunker designed for front end loader, and skip hoist discharge to hauling trucks. Handles 40 tons per hour on a 45-second mixing cycle.



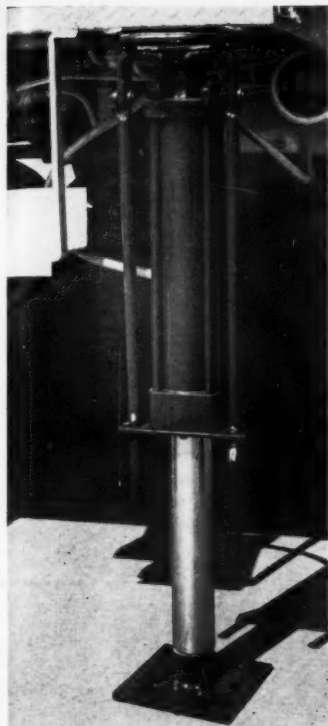
THE LITTLE MONSTER®



• Write for your copy of Bulletin LM-1 and name of your nearest MADSEN Distributor.

MADSEN IRON WORKS, INC.
14100 E. ROSECRANS AVE., P. O. BOX 38
LA MIRADA, CALIFORNIA

CONTRACTORS AND ENGINEERS



The Holan Model HL self-stowing hydraulic support jack.

Support Jack for Derrick

■ A self-stowing hydraulic jack is available for the Holan Model HL power-operated derrick. The support jack can also be used on other construction machines and on trucks. It is operated by a control lever located near the derrick controls, so that one man can position the jack and erect the derrick quickly.

A double-acting cylinder adjusts the Holan Model 4095 support jack from 25 to 39½ inches in height, and check valves lock it in position. With special kits available, the jack can also be used on Holan towers, ladders, and line bodies.

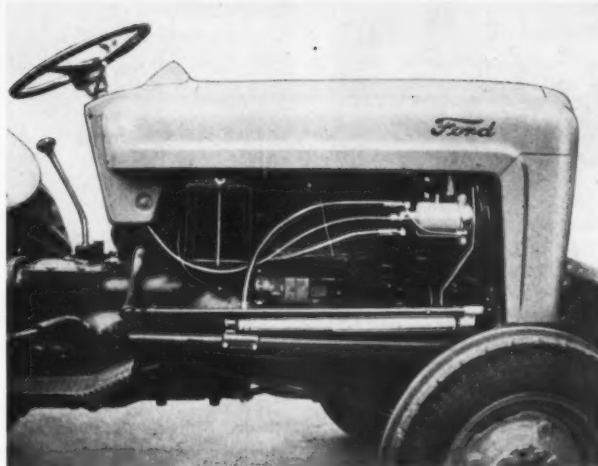
For further information write to the J. H. Holan Corp., 4100 W. 150 St., Cleveland 11, Ohio, or use the Request Card at page 18. Circle No. 716.

Hydraulic Power Steer For Wheel Tractors

■ Hydraulic power steering equipment that can be installed on any Ford, Ferguson, or Ford-Ferguson tractor without disturbing or discarding any of the regular tractor steering mechanism is announced by Leland T. McGee Mfg. Co., Inc., 410 Dixon Ave., Compton, Calif. The McGee hydraulic power steering system delivers a maximum of 1500 pounds of pressure to give fingertip control of the steering wheel.

Power steering reduces operator fatigue and makes it unnecessary to fight the wheel even under severe conditions. It also eliminates wear and tear on the steering mechanism.

For further information write to the company, or use the Request Card at page 18. Circle No. 823.



◀ The McGee hydraulic power steering equipment was installed on this Ford tractor without disturbing the regular steering mechanism.

American Explosives and Accessories Clear the Way for America's Super-Highways!



Here's the Breakdown

Highway	No. of Contractors	Time	Types of Rock	American Explosives Used
Pennsylvania Turnpike Irwin to Carlisle	5	1939	hard limestone, shale, limestone, trap rock, sand rock	40%, 60% ammonia and gelatin dynamites
Philadelphia Extension Turnpike	5	1949-50	"	"
Western Pennsylvania Extension Irwin to Ohio Line	3	1951	Same, except no trap rock	"
West Virginia Turnpike Charleston to Princeton	4	1953-54	shale and sandstone, hard, medium, soft	40% ammonia and gel, plus semi-gels
New York Thruway Buffalo to New York City	6	1953-54	hard to soft limestone, gneiss rock, trap rock, hard shale	40, 60, 75% standard gel and semi-gels
Ohio Turnpike Eastern border to Indiana Line	1	1953-54	shale and limestone	40% standard gel

Express highways like the famous Pennsylvania Turnpike and the New York Thruway are revolutionizing motor transportation and highway construction methods.

Today, construction engineers and contractors have to think in terms of state-wide roads, over every type of terrain — presenting a wide variety of construction problems. They have to make sure that the equipment they use — the tools, machinery and explosives — will do the job wherever it happens to be.

Leading contractors on major expressways, and quarry operators along the route who supply stone for the right of way, rely on American Explosives for safe, economical handling, good breakage, and dependable results with every shot.

Capable Field Engineers Are Available At Your Call

HIGH EXPLOSIVES • PERMISSIBLES • BLASTING POWDER • BLASTING ACCESSORIES



AMERICAN Cyanamid COMPANY

EXPLOSIVE DEPARTMENT

30 Rockefeller Plaza, New York 20, N. Y.

Sales Offices: Pittsburgh, Pa., Bluefield, W. Va., Scranton, Pa., Chicago, Ill., Pottsville, Pa., Maynard, Mass.



For "cold weather" starting of all types internal combustion engines, diesel, tractor fuel and gasoline.

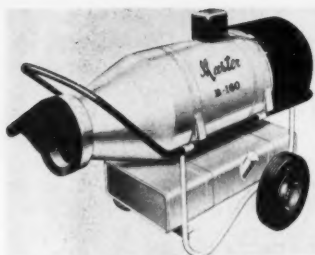
Warranted

To be non-injurious to any type of engine when used in accordance with instructions.

P. O. Box 2828 DeSoto Station
92 WEST CAROLINA ST.
MEMPHIS 2, TENNESSEE

Blended and packed by

LEWIS-DIESEL ENGINE CO.



The Master space heater is designed to be taken wherever spot-heat is needed.

Portable Space Heater Provides Spot-Heat on Job

■ An improved portable space heater that will effectively spot-heat any inside or outside area is available from Master Vibrator Co., 361 Stanley Ave., Dayton, Ohio. The heater is offered in two models that deliver 160,000 or 400,000 Btu of forced-air heat for 12 hours at a time without refueling. Fuel may be either kerosene or No. 1 or No. 2 fuel oil.

Wheel mounting and all-steel welded construction make the heater suitable for use on construction sites. The entire unit takes up less than 10 square feet of floor space. Operating at the flip of a switch, the heater rises to full heat in 2 minutes.

A stainless steel combustion chamber eliminates gases so that no venting is necessary, according to the manufacturer. Other features are a solenoid on the pump for instant flow and cut-off of fuel, a fuel-tank control to shut off the burner when the fuel supply is used up, and a thermostat for temperature control.

For further information write to the company, or use the Request Card at page 18. Circle No. 682.

Data on Forming Systems Using Twisted-Wire Ties

■ A folder demonstrating the versatility of the twisted-wire form tie is available from Gates & Sons, Inc., 80 S. Galapago, Denver 19, Colo. The Gates wire tie is offered in a rod-type tie and in a 2x4 tie for use where rods are not feasible.

Several forming systems using the two types of wire ties are illustrated. These include sheathing or panel forms for a variety of sizes and types of walls.

The ties may be obtained nicked so that they will break off 3/4 of an inch inside the wall, leaving only a 9/64-inch hole in the surface.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 753.

Folder Explains Operation Of Diesel Pile Hammer

■ Literature explaining the operation of the diesel pile hammer made by the M T P Co. of America, 14031 Huston St., Sherman Oaks, Calif., is available on request. The folder uses a cutaway drawing of the pile hammer to illustrate how a stroke of 18,000 foot-pounds of energy is delivered to the pile at 50 blows per minute.

The total driving force is developed through compression, the downward striking force of the piston, and through the explosive force of fuel in a combustion chamber. No steam boilers or air compressors are needed.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 824.

Correction—Curing Compound

Techkote Sealtext clear concrete-curing compound, manufactured by Techkote Co., Inc., Inglewood, Calif., was used to cure the paving done at Ellsworth Air Force Base near Rapid City, S. Dak. (See "Thick Concrete Pavement Laid on Airfield Aprons", C & E, October, 1954, pg. 68.)

Soil-Shredding Machine

■ Wheel-mounted soil-shredding equipment that handles up to 120 cubic yards of topsoil per hour has been placed on the market by Lindig Mfg. Co., Dept. CL-24, 1875 W. County Road C, St. Paul 13, Minn. The Model CL-24, a heavy-duty shredder-conveyor unit, is available with either gasoline or diesel power units.

The components of the machine are



The Lindig Model CL-24 soil-shredding machine.

arranged so that material is fed to a 2-yard hopper by a tractor scoop or dragline and carried on a 20-inch feeding conveyor belt to the shredding rotor. The shredded material is

discharged directly onto a 24-inch trough-type loading conveyor belt.

For further information write to the company, or use the Request Card at page 18. Circle No. 696.

The Facts Behind Allis-Chalmers Leadership in Torque Converter Tractors

Fourteen years of experience . . . eight years with production models

. . . thousands of torque converter tractors out in the field . . .

millions of operating hours on every kind of work in the construction business.

TODAY'S top contractors have given their "stamp of approval" to torque converter drive—as a key factor in the new standards of tractor performance they need for today's closely-bid jobs. Here's why —

Automatic Matching of speed and pull to load and terrain conditions . . . more dirt moved every hour, day in and day out.

Hydraulically cushioned protection for engine, clutch, transmission, rear end. The entire tractor lasts longer! That means less downtime, lower maintenance costs, more profit.

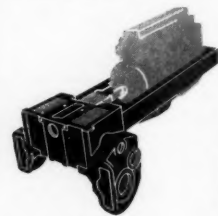
Operators love it! Allis-Chalmers torque converter tractors are so easy to handle (most shifting is eliminated) that operators do a top-notch job all day long.

Yes, the construction industry's most experienced men are demanding and buying torque converter tractors . . . and in this, Allis-Chalmers leads the way.

But, remember, you don't buy just one feature . . . you buy a tractor, with torque converter drive designed as a matched part of the entire machine. This advanced drive is only one of the many outstanding features that have switched so many leading contractors to Allis-Chalmers tractors. So . . .

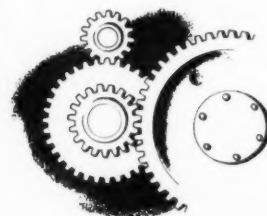
Check all these features before you buy!

All-Steel Box-A Main Frame with one-piece, rear-end housing gives improved weight distribution, soaks up shocks, provides better equipment mounting, greater servicing ease . . . longer equipment life.



Service Simplicity of Unit Construction — Power drive components can be easily removed, repaired or replaced without disturbing adjacent parts . . . saving time and money.

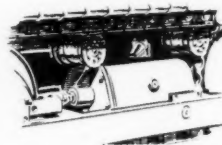
"Live" Sprocket Shafts — "Live" shafts with straddle-mounted bearings permit small, more serviceable seals. Double reduction final drives with smaller gears and shorter, heavier shafts mean extra ground clearance, better alignment, longer life.



1,000-Hour Lubrication — Tapered roller bearings and positive seals on truck wheels, idlers, support rollers and final drives extend lubrication intervals, cut downtime.

Hydraulic Booster Steering — Gives operator small tractor maneuverability with new ease. In addition, self-energizing brakes which take hold with a firm, uniform grip, provide exact control and sure safety with less pedal pressure.

True-Dimension Track provides maximum ground contact . . . plus the right design, the best steels for every job condition . . . heat-treated for long life with the industry's newest, most complete facilities.



Oil-Enclosed Track Release Mechanism — Operates in oil, seals out dirt and moisture, always in working condition to provide positive protection.

See your nearby Allis-Chalmers dealer now for the full story. Whether you're interested in a big tractor like the HD-20 or HD-15 . . . or the smaller HD-9 and HD-5, you can be sure of getting the most advanced tractor in the business, because Allis-Chalmers is the leadership line.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.
CONTRACTORS AND ENGINEERS

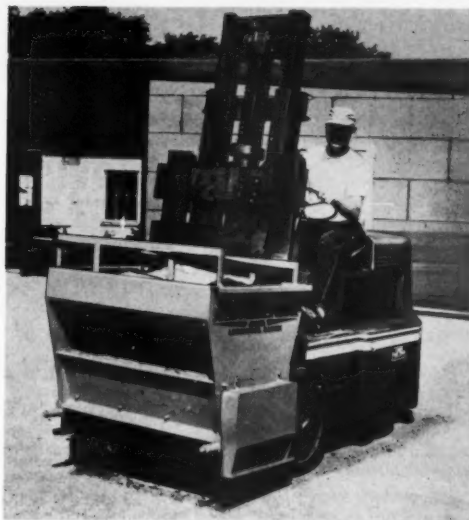
Material Spreader Mounts On Fork-Lift Truck

■ A new spreader that handles salt, cinders, sand, and crushed stone can be mounted on any standard fork-lift truck. The machine will also spread oil-absorbent or moisture-absorbent materials.

The Swenson fork-lift spreader can be adjusted to spread an extremely thin layer of materials. The metering roller is spring-loaded to prevent damage in case any materials which cannot be crushed enter the hopper. Power is supplied by a rubber-tire friction drive from the front wheel of the lift truck.

For further information write to Swenson Spreader & Mfg. Co., Lindenwood, Ill., or use the Request Card on page 18. Circle No. 736.

The new Swenson spreader is mounted on a fork-lift truck.



Two Generals Named to Mississippi River Comm.

Brig. Gen. William E. Potter and Brig. Gen. Charles G. Holle of the U. S. Army Corps of Engineers have received recess appointments as members of the Mississippi River Commission from President Eisenhower. They succeed Brig. Gen. Herbert D. Vogel, formerly southwest division engineer and presently chairman of the Tennessee Valley Authority, and the late Brig. Gen. Ernest Graves.

Gen. Potter, Missouri River Division engineer, was graduated from the United States Military Academy, West Point, in 1928. He is a former district engineer at Kansas City and in Alaska, and a former assistant chief engineer for civil works.

Gen. Holle, the South Atlantic Division engineer, is a 1920 graduate of West Point. He has served as assistant to the district engineer at Vicksburg, Miss., assistant to the president of the Mississippi River Commission, district engineer at New Orleans, and executive in the office of the chief of engineers.

The Mississippi River Commission is composed of seven members, and is responsible for improvements in flood control and navigation in the lower Mississippi River and its tributaries.

The recess appointments will be submitted to the Senate for confirmation when Congress reconvenes in January.

Why Engines Require Cooling-System Care

■ Just how important is the cooling system of an internal combustion engine? The service division of Cummins Engine Co., Inc., Fifth St., Columbus, Ind., believes it to be just as important to an engine as the lubricating system, the fuel system, or the air system.

To make its point, the company is distributing a new bulletin that contains many practical suggestions on the best way to care for an engine's cooling system. The information is not only for Cummins diesels, but may be applied to all internal combustion engines.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 692.

Hand-Powered Puller

■ A hand-operated ratchet-type pulling device is illustrated in a leaflet from the J. E. Shaffer Co., 1219-21 W. 17th St., West Tulsa, Okla. The Shaffer Come-Along puller is available in three models, with capacities ranging from 2,000 to 8,000 pounds. Tensioning force may be applied to chain, wire, or rope, and the device used as a puller, tensioner, or load binder.

To obtain this literature write to the company, or use the Request Card that is found in at page 18. Circle No. 760.

Sales Engineer Transfer Is Announced by Nordberg

Sales engineer Peter C. Friend has been transferred to the San Francisco district office of the crusher division of Nordberg Mfg. Co., Milwaukee, Wis. There, Mr. Friend will assist T. D. Davis, western branch manager.



1940 THE FIRST tractor in the world with torque converter drive.



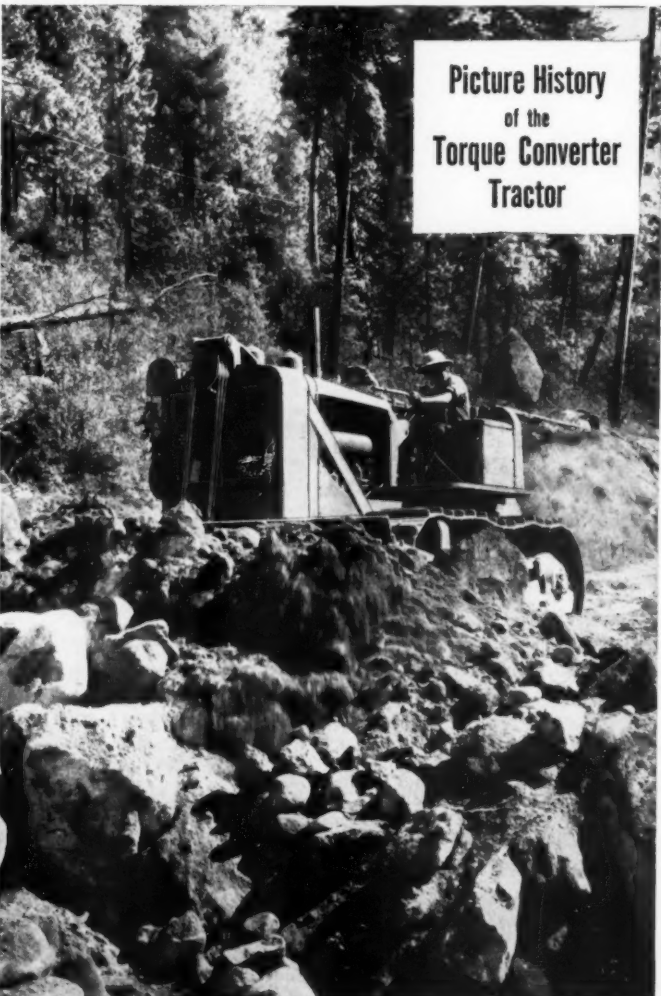
WORLD WAR II—The torque converter equipped M-4 military tractor, built by Allis-Chalmers.



1947 THE HD-19 proved the value of torque converter drive for big production.



1951 THE HD-20, 175 net engine hp, most productive tractor in the business.



1954 THE HD-15C, 135 net engine hp, brings advantages of torque converter to a new range of work.



The German submarine U-505 is made ready to be winched stern first out of the floating drydock and run onto the beach. Steel-channel skid plates, welded to the sub cradle, traveled on 2 1/4-inch solid steel rollers which were laid on 80-pound rails.

Moving U-Boat to Shore Requires Speed Plus Ingenuity

*Fabrication of a steel cradle,
and pier and dredging work,
necessary to transport
captured submarine to museum*

THE STEP-BY-STEP engineering required to move the captured German submarine U-505 a distance of 688 feet from the Chicago lakefront to the Museum of Science and Industry is the final chapter in the story of this vessel—the first taken in time of war by U. S. forces since 1815.

The seizure of the U-boat by Rear Adm. Dan Gallery's task group off the West African coast more than ten years ago was made during one of the last naval engagements of World War II. This June, the sub was towed from the Portsmouth, N. H., naval base to Chicago to be installed at the museum. But until the boat was docked at Chicago, final designs for the exhibit could not be made, since original drawings of the sub were not sufficiently detailed. To cope with changes that might be made as work progressed, all engineering decisions had to be flexible.

Extensive repairs and modifications were scheduled for the sub on its arrival in Chicago. The 30,000 gallons of diesel fuel remaining in its tanks was first pumped into fuel tanks, since anticontamination laws prohibited the fuel from being pumped into the river. Then after being declared gas-free, the ship was placed in a graving drydock so that pig-iron ballast could be removed.

Cradle Fabrication

It was originally estimated that the sub, in a semistripped condition, would draw only 12 feet of water. But a total of 89 tons of pig iron had to be removed from the ship before this draft could be obtained. The pig iron was taken from compartments in the 4-foot-wide and 2-foot-deep box keel which runs about 120 feet along the center section of the craft. Fifteen tons of pig iron were left in the forward compartments of the keel for trim.

When the pig iron had been removed and the sub was drawing 12 feet of water, the ship was towed to

Faster work cycles, more work...

Contractors demand
equipment with a
**Fuller torque
converter
coupling**



Two workhorses in construction equipped with Fuller Torque Converter Couplings: Hough Model HM PAYLOADER (above), Pettibone Mulliken SPEEDALL, Front End Loader (right).



The performance of Fuller Torque Converter Couplings has been instrumental in helping contractors win the battle of competition, meeting contract deadlines, and offsetting rising costs of operation.

Here's *why* contractors demand Fuller Torque Converter Couplings. Torque demand is matched to the

load through 2.1:1 torque multiplication, and the converter automatically returns to smooth, economical fluid coupling operation as load demand drops. Operators can crowd the load at all times without engine lugging or stalling... getting faster work cycles, more production every shift. The fluid cushions out shock

loads... saves engines, transmissions, drive lines, axles, brakes and tires... reduces maintenance expense.

If you are looking for equipment that offers *profit-plus performance*... look for equipment with a Fuller Torque Converter Coupling installed as the power transmission component. Write for descriptive folder.

The following equipment manufacturers offer Fuller Torque Converter Couplings in their equipment.

The Frank G. Hough Co.
PAYLOADERS
Contractors Machinery Co., Inc.
TROJAN LOADERS
Austin-Western Company
SELF PROPELLED CRANE

The Buda Co.
TRACTORS & SHOP MULES
Joeger Machine Co.
LOAD-PLUS LOADERS
The Gerlinger Carrier Co.
FORK LIFT TRUCKS

Pettibone Mulliken Corp.
SPEEDALL & SPEEDSWING LOADERS
Plymouth Locomotive Div. F-R-H
INDUSTRIAL LOCOMOTIVES
Unit Crane & Shovel Co.
TRUCK CRANES
Tranco Div., LeRoi Co.
TLF LOADERS

where torque *really* goes to work



FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wisc. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Western Dist. Branch (Sales & Service, All Products), 641 E. 10th St., Oakland 6, Cal.

GIVE TO
CONQUER
CANCER





A workman wraps another strand of wire rope around the blade of an International TD-24 crawler tractor which serves as a deadman as the sub is winched across the beach and the thoroughfare.

a floating drydock owned by the American Shipbuilding Co. Its drydock was built in two sections and pin-connected at the 2-foot separation. Here, workmen began the job of fabricating a steel cradle for the sub.

This cradle consisted of two longitudinal 14-inch WF beams, each 135 feet long, which were tied together by 8x8-inch WF beams centered above the bulkheads and trusses in the floating dock. The 1/2-inch steel-channel skid plate to which the cradle was welded, and the cradle itself, rested on 2 1/4-inch solid steel rollers, which in turn were supported by triple lines of 80-pound rails.

Rails and rollers were installed after the submarine had been jacked up 7 1/2 inches. Holes, cut through the box keel in 21 places, permitted the passage of lateral I-beams which were welded to the top of the longitudinal beams.

Instead of a seat fabricated to the exact external dimensions of the pressure hull and ballast tanks, a saddle built roughly to the contours of the bow and stern section supported the sub. These saddle sections were welded to the cradle, and the gaps between saddle and hull filled with from 3 to 6 inches of grout. Grout also filled in the gap between the wooden blocks supporting the hull.

To obviate the possibility of the sub rolling off the drydock as it was towed from the shipyard to the shore, 11x11-inch steel plates were welded to both the rails and the cradle on each side. The rails and the cradle extended 5 feet beyond the stern of the drydock so that they could be tied into rails on the pier at 57th St.

Dredging and Pier Work

As modifications were being made on the sub and the cradle constructed, dredging and pier operations were taking place at the beaching site. Soundings showed that a channel would have to be made leading into

the pier to accommodate the floating drydock, which drew 7 1/4 feet of water. Great Lakes Dredge & Dock officials had a channel dug 9 feet deep and 80 feet wide, extending 350 feet out from the beach. To compensate for drifting sand which shifted into

(Concluded on next page col. 3)



Moving forward on its 688-foot trip to the Museum of Science and Industry, the sub has almost completed the most difficult stretch—the first 313 feet from the beach to the opposite side of Chicago's Outer Drive.



HAVE YOU SEEN A DEMONSTRATION OF THE DAVIS Pit-Bull?

Why not prove it to yourself that the Davis **Pit-Bull** is America's most versatile equipment. See how a low-cost tractor is converted into a powerful industrial unit. The **Pit-Bull** equipped with its bucket and scarifier will perform as good or better than conventional machines costing thousands of dollars more. Because of its compactness, the quick reversing features and the rear-end steering, the **Pit-Bull** has maneuverability second to none. Also consider the extra savings you make because of the other attachments that fit so easily onto the basic unit. It will be easy for you to understand why it can be your most economical investment in machinery without sacrificing your work capacity. The one-man operation will save you hundreds of dollars by eliminating idle equipment and man-power time. *Let a demonstration prove it!*

Ask Your Dealer for a Demonstration Today, or Write Direct and We'll Arrange It for You.



Here's the NEW Davis Loader for 1955

The greatest front end tractor loader value on earth. Now with more features than ever before, including lift rams with down pressure, rubber mounting with shock slots, double-strength lift arms, plus the other famous features that has made the Davis Loader America's Quality Loader. It fits all popular tractors.

SEND this coupon for FREE literature

Please send me literature on the Davis Pit-Bull ☐ and literature on the Davis Front End Loader to fit a _____

model tractor. I would like a demonstration on the Davis Pit-Bull ☐

Name _____

Address _____

City _____ State _____

MID-WESTERN INDUSTRIES, INC.

1009 S. WEST ST., DEPT. B
WICHITA, KANSAS

STANDS UP TO SEVERE USE

and
even abuse

One word describes a Hayward — ruggedness. Yes, it's as tough, strong, sturdy as a bucket can be — and even more so. Extreme simplicity, little if any upkeep, high operating efficiency! Details on request. Write! THE HAYWARD COMPANY, 50 Church Street, New York 7, N. Y.



HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

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DECEMBER, 1954

WITH A
BIRMINGHAM
LOWBED
TRAILER



MOVE IT YOURSELF

There is a design and model of Birmingham Lowbed Trailer to haul your concrete mixers, bulldozers, power cranes, road scrapers, dirt movers, ditching machine or any heavy equipment. They're built rugged for the big loads.

SEE OUR DISTRIBUTOR OR WRITE FOR DETAILS

BIRMINGHAM MANUFACTURING COMPANY, INC.
P. O. Box 1351, Birmingham, Alabama

HOW TO BREATHE UNDER WATER



Tunnels like this project under the harbor at Boston would not be possible without dependable push-pull ventilation. That's why you see so much Naylor light-weight pipe in this vital service. Its proved dependability in push-pull operation is due to Naylor's exclusive lockseamed-spiralwelded structure which provides greater collapse strength and extra safety in a light-wall pipe. Naylor's one-piece Wedge-Lock coupling makes it a simple matter to install Naylor lines in tunnel construction because it permits the line to hug the wall and joints can be made up with only one side of the line in the open. For complete details write for Bulletins No. 507 and No. 514.

NAYLOR PIPE

Naylor Pipe Company • 1270 East 92nd Street, Chicago 19, Illinois
Eastern U.S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

(Continued from preceding page)

the cut during a series of heavy storms, the channel was enlarged.

Pilings were driven into the floor of the lake to provide offshore anchorage for the drydock. The stern end of the drydock was tied to a deadman and a pier 23 feet 7 inches wide and 53 feet 2½ inches long. The pier rested on 14×14-inch oak pilings with 12×12-inch oak beam walls built especially for the operation.

As the floating drydock touched the pier, cribbing was established and tracks and rollers laid which were needed to move the sub from the drydock to the sidewalk on the east side of the Outer Drive. This part of the operation was in the hands of Kenneth Adair, president of LaPlant-Adair Co., Indianapolis, Ind., a house-moving firm which had the contract to move the submarine from the shore to the exhibition site.

Beaching

The sub was moved from the drydock to shore by a truck-mounted winch. Six lines of ¾-inch wire rope, run through 3 pulleys, were secured to the cradle. Four pulleys carried the rope to an I-beam buried in 12 yards of concrete to serve as a deadman.

After a welder cut the 11×11-inch plates tying the skid plates to the rails of the drydock, the sub was winched onto the run. As the craft was being beached, the ten bulkheads on the drydock were gradually flooded to keep its bow from rising out of the water. Flooding the three watertight bulkheads on each side of the 78-foot section, and the two bulkheads on each side of the 50-foot section, made the drydock draw the same amount of water as it did when it carried the total weight of the sub. This operation, together with the close alignment of track and rollers on both the run and the drydock, made the beaching job go swiftly.

A total of 48 jacks—each of 35-ton capacity, lifted the submarine 4½ feet from the beach run to the run

constructed over the Outer Drive. It was at this point that the only threat to the entire operation occurred: autumnal northeasterly storm winds whipped breakers over the pier and washed away some of the cribbing. All of the jacks remained in position, however, and an International TD-24 crawler tractor bladed sand from the lake into a 9-foot protective dike around the run. The TD-24 then bladed a passage through the parkway which separated the Outer Drive from the exhibition area. It also served as a deadman while the sub was winched across the thoroughfare, 313 feet from the water's edge.

As the submarine was moved near the exhibition area, it was swung about 100 degrees, so that it was in position to be moved off the cradle and onto concrete piers erected at the museum. To effect this, a run was built linking the parkway run with the run leading to the piers. Then the sub was moved laterally along rollers mounted on rails until it was in the proper position to be jacked off the cradle and set on the piers.

THE END

Compact Air Compressor

■ A bulletin is available on the Le Roi 105-cfm Utility air compressor. The Utility model has been placed back into the Le Roi line after an absence of several years. The improved Utility now offered features better air cleaning and cooling than before through the use of oil-bath air cleaners and a pressurized cooling system.

Installation drawings show that the compressor's width is 25 inches with an over-all length of only 82 inches. This length allows the compressor to be mounted transversely against a truck cab without exceeding the maximum truck width regulations for any state.

To obtain this literature write to Le Roi Co., Advertising Dept., 1706 S. 68th St., Milwaukee 14, Wis., or use the Request Card at page 18. Circle No. 810.

Greatest buy in HEAT

300,000

BTU's

\$325 ELECTRIC DRIVE

\$350 GASOLINE ENGINE DRIVE
F. O. B. FACTORY



for CONTRACTORS,
INDUSTRIAL PLANTS,
FARMERS, ROAD BUILDERS

Compact, portable, safe and efficient, the oil fired Clayton Salamander supplies clean, odorless hot air at high velocity . . . at the rate of 2400 cu. ft. per minute . . . for heating space, drying out new construction, thawing frozen ground, aggregates and equipment, removing snow and preventing the freezing of wet concrete while curing. Hundreds of other uses.

Made in two models of identical capacity, 300,000 BTU's per hour. Gasoline engine drive for 100% portability and remote use; electric drive for general utility. Burns less than 2¼ gals. kerosene or stove oil per hour. Made by Clayton Manufacturing Company, leaders in combustion engineering and building of package type steam generators. Write for complete literature.

CLAYTON MANUFACTURING CO.
BOX 550, EL MONTE, CALIF.

SOME TERRITORIES OPEN FOR EQUIPMENT DISTRIBUTORS

SPACE HEATING
•
PAVING CURING
•
SNOW REMOVAL
•
MATERIALS AND
GROUND THAWING
•
PAINT DRYING

CONTRACTORS AND ENGINEERS



The Delta space heater.

New Space Heaters

Space heaters with outputs of 160,000 and 210,000 Btu per hour are now being produced by Delta Heating Corp., Cole St. and Reading R. R., Trenton 8, N. J. As highboy furnaces, the Models HB160 and HB210 are shipped with the filter located at the bottom of the furnace for bottom cold air return. There is also provision for returning the air at either the right or left side of the furnace.

For space heating, an accessory bonnet is supplied which consists of a rectangular plenum with die-formed louvers on each of its four sides. A Delta flanged gun-type oil burner attaches to the front of the furnace.

For further information write to the company, or use the Request Card at page 18. Circle No. 705.

Let's roll up our sleeves today and give to the Red Cross Blood Bank.

Diesel Engine Service Training Is Offered

Training in the servicing of diesel engines is available to owners and operators of GM Detroit diesel engines through the General Motors diesel mobile training units. These units, staffed by experienced factory-trained instructors, hold special schools all over the country. They are equipped to present a down-to-earth course in GM diesel engine know-how.

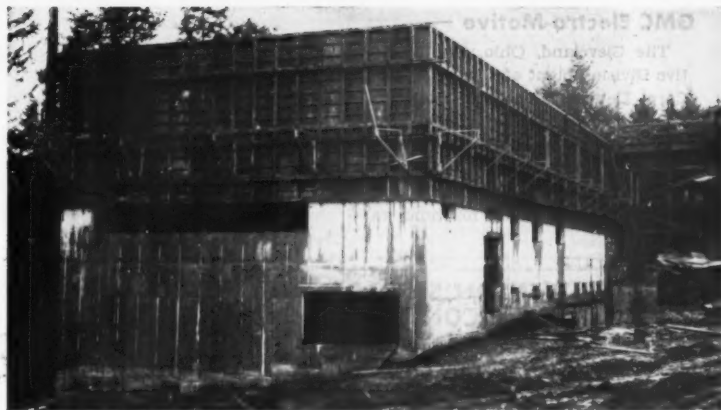
Inquiries as to when a GM diesel mobile training unit will be in a given locality should be addressed to the nearest GM diesel authorized outlet. Literature describing GM service training courses is available on request.

To obtain this literature write to the Service Training Dept., Detroit Diesel Engine Division, 13400 W. Outer Drive, Detroit 28, Mich., or use the Request Card at page 18. Circle No. 742.

International Reassigns District Office Personnel

Changes in district management personnel for the International Harvester Co., Chicago, Ill., include the reassignment of three motor-truck district managers and the appointment of new managers for two of the motor-truck sales operations.

J. O. Lambeth, former district manager at Charlotte, N. C., has been transferred to Nashville, Tenn., while C. T. Helin, former district manager at Houston, Texas, has assumed the same post at Charlotte. The San Antonio, Texas, district manager, P. C. Johnson, is now holding the same post at Birmingham, Ala. J. S. Turner, former assistant district manager at Shreveport, La., is district manager of the Houston office. H. T. Rosell, assistant at San Antonio, is now district manager of the office. Hugh Hanks, former assistant at Lincoln, Nebr., has assumed the same post at Omaha. J. M. Coyle succeeds Mr. Hanks in the Lincoln office.



New Dormitory Lewis and Clark Campus, Portland, Oregon, Donald M. Drake Company, Gen. Con.

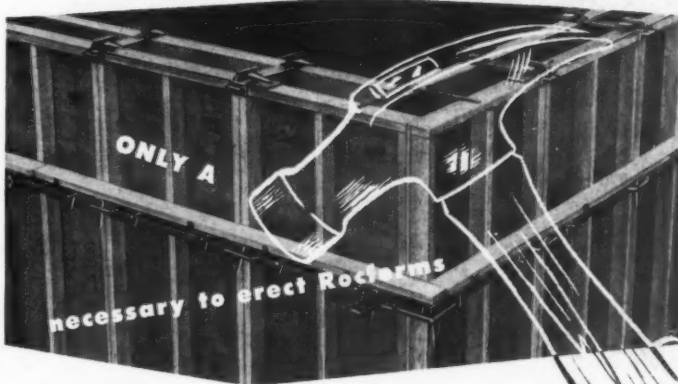
Pouring Second Lift of High Wall with Symons Forms

24' wall poured in two lifts with Symons Forms. Scaffolding attached to forms makes easier setting and stripping of top forms. Note absence of bracing and minimum waling.

Send plans for your next job and get complete layout and cost sheet—no obligation. Catalog F-10 sent FREE upon request. Symons Clamp & Mfg. Co., 4251-L4, Diversy Avenue, Chicago 39, Illinois.

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ROCFORM SYSTEMS



most economical method
of forming concrete

Developed and Proven by Practical Concrete Contractor



Greatest development in
the Concrete Construction
Field in half a century!

simplest

Only a hammer necessary to erect with the Rocform System.

fastest

10 man hours to form the average basement.

strongest

Rocform tapered, steel tie-rods and all-metal walers hold forms rigidly in place—can be reused after job.

safest

Light, easily-handled Rocform plywood panels reduce accident hazard to the absolute minimum.

cheapest

Rocform Systems eliminate costly waste and expensive handling with ordinary fillers and forming lumber saves 50% of present labor costs.



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CONCRETE FORMING ENGINEERS
Offices in principal cities

Home Office & Factory — 15160 W. 8 Mile Rd., Detroit 35, Michigan

Limited Franchises Available

SAVE MONEY

by the batch!



with IROQUOIS Complete ASPHALT PLANTS

Records of installations converted from stock assemblies (that "just grew") to Iroquois Asphalt Plants (engineered as units) show worthwhile savings. Reason: Iroquois engineers each plant "just so" for its own particular location, capacity, type of mix. Write today for free bulletin and further information.



*Iroquois Division**
POSEY IRON WORKS, INC.

*Established over 60 Years

LANCASTER, PA.—New York Office: Graybar Building

GMC Electro-Motive Plant Is Transferred to Euclid

The Cleveland, Ohio, Electro-Motive Division plant of General Motors Corp., Detroit, Mich., was last month transferred to the Euclid Division of the company so that its facilities could be given over to the production of the new TC-12 crawler tractor. The new earthmoving machine was

unveiled only a few weeks prior to the transfer.

With the acquisition of the 480,000-square-foot Cleveland plant, Euclid's facilities have been more than doubled. Management and personnel at the Electro-Motive plant have not been affected by the change.

USE SWENSON SPREADERS FOR ICE CONTROL

SPREADS SALT 200 LBS. PER MILE!

Spreads Narrow Strip or Full Traffic Lane

Spreads all materials. Salt, cinders, sand, calcium chloride, rock chips, etc. Adjustable to spread any desired quantity in any width from a narrow strip to a full traffic lane.

Write for Complete Information
SWENSON SPREADER & MFG. CO.
LINDENWOOD, ILLINOIS

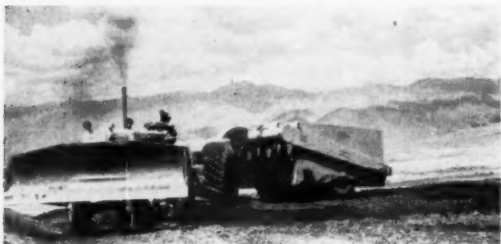


COMPACTING EARTH FILLS



ON HIGHWAYS, AIRPORTS AND DAMS, new records are being set every day by Southwest Compaction Rollers. Here two 75-ton rollers and Cat DW21 tractors are compacting 6" to 12"

lifts with only 4 to 6 passes. They are keeping pace with the largest earth-moving equipment working on 24-hour job schedules in the High Sierras.



ONE YEAR AHEAD of schedule! This record on a large earth fill dam is partially due to the improved high speed of compaction by Southwest Rollers which are used exclusively on this job.



ADAPTORS FOR TRACTORS, most models or types, are available at Southwest. On highway and housing projects, small 20-ton Compaction Rollers can be towed by motor graders or other power equipment.

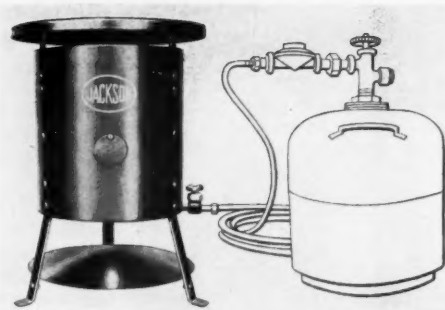


SPEED PAYS OFF! A fleet of four 50-ton Southwest Rollers, with Cat and Le Tourneau tractors, use their weight, their kneading action of tires and extra oscillating freedom to permit faster traveling.



VERSATILE! Any standard 4-section Compaction Roller can be converted into a 3-, 5- or 6-section roller. Parts for conversion are available as a complete package.

A porthole for easy lighting and a heat deflector are safety features of the Jackson salamander.



Gas Salamander Designed With Safety Feature

■ Just introduced is a new gas salamander recommended for use where instant temporary heat is needed. The heater, made by the Jackson Mfg. Co., Harrisburg, Pa., delivers 75,000 Btu per hour of fume-

less heat.

Some interesting features are: an inside baffle designed for efficient flow of heat, a porthole on the side for safe and easy lighting, and a shield which serves to deflect heat along the floor. This is also a safety feature, since it prevents the formation of a hot spot beneath the salamander.

The heater is 25 inches high and weighs 38½ pounds.

For further information write to the company, or use the Request Card at page 18. Circle No. 825.

Catalog Lists Equipment For Road Construction And Concrete Production

■ A new construction machinery bulletin published by the Blaw-Knox Co., Pittsburgh 38, Pa., is now available. It contains information on the company's line of equipment for the construction of roads, highways, and airports, or for the production of ready-mix concrete.

Items listed are base pavers, wideners, batching and mixing plants, clamshell buckets, concrete buckets, concrete finishers and spreaders, steel forms, subgraders, and truck mixers.

To obtain Bulletin No. 2463 write to the equipment division of the company, or use the Request Card at page 18. Circle No. 826.

Prefabricated Buildings For Use on Job Sites

■ Prefabricated steel and aluminum buildings that can be used as field offices, repair shops, equipment and material storage sheds, and small warehouses are illustrated in a folder from John Cooper Co., Inc., 301-309 Second St., Hackensack, N. J. The Cooper-Built buildings are delivered ready for field erection and can be dismantled and moved easily.

The siding and roofing of the structures are of corrugated or weatherboard-type galvanized steel or aluminum, and the frame is made of structural steel.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 762.

Form-Binding Equipment

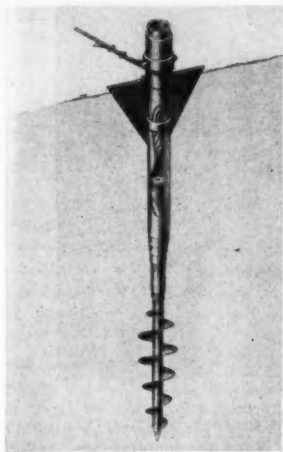
■ The line of strapping, strapping tools, and accessories made by A. J. Gerrard & Co., 1950 N. Hawthorne Ave., Melrose Park, Ill., is illustrated in a new brochure.

The Bulkholder line of tensioning tools, sealers, seals, cutters, strapping, and combination units is used most frequently in heavy construction for binding concrete forms.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 733.

CONSTRUCTION MACHINERY DIVISION
Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA



The Ezy pier anchor.

Versatile Screw Piling

■ A quickly-installed screw piling used for reinforcing foundations and for guying structures such as elevators and scaffolds is offered by Van Dyke Industries, 3625 Cahuenga Blvd., Los Angeles 28, Calif. The Ezy pier-anchor has a pointed steel body with tapered flanges and packs soil tightly around the blade as it is screwed into the earth. Installed with 15 or 20 turns, it is reported to have a high load resistance to both tension and compression.

The device is made in a wide variety of sizes, with extensions available for added penetration.

For further information write to the company, or use the Request Card at page 18. Circle No. 711.

Medium-Size Model Added to Scraper Line

■ A medium-size rubber-tire pull scraper with an 8.4-cubic-yard struck and an 11-cubic-yard heaped capacity has been announced by Allis-Chalmers Mfg. Co., Milwaukee, Wis. The new model brings to eight the number of Allis-Chalmers pull scrapers now available. Sizes range from 2 cubic yards struck to 23 cubic yards heaped capacity.

Cable operated, the new Model 108 is of welded box-type construction. It has an over-all length of 27 1/3 feet, an over-all width of 10 1/3 feet, and a 7 2/3-foot height in load-carrying position. The width of the cut made by the equipment is 8 1/2 feet, and the depth ranges to 10 inches.

Features of the new unit include a three-piece reversible-type cutting edge; a free-floating-type front apron, a low and wide bowl with a curved bottom and smooth interior, and forced ejection.

For further information write to the company, or use the Request Card at page 18. Circle No. 687.

Cement-Hauling Bodies For Trucks and Trailers

■ Bulk-material transport bodies for trucks and trailers are illustrated in a leaflet from Baughman Mfg. Co., Shipman Road, Jerseyville, Ill. The Baughman Hi-Speed bodies, designed to haul cement or other dry powdered materials, are offered in lengths of 9 to 35 feet. Capacities are specified at 16 cubic feet per linear foot of body.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 759.

Contractors' Wheelbarrows

■ The extensive wheelbarrow line made by the Buch Mfg. Co., Elizabethtown, Pa., is covered in literature available on request. Contractors' wheelbarrows illustrated are available in 4 to 6-cubic-foot capacities, measured heaped. Models are offered with wood or steel handles and with steel or rubber-tire wheels.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 766.

Line of Vibrating Screens

■ A bulletin describing the Gryoset vibrating screens is announced by The Productive Equipment Corp., 2926 W. Lake St., Chicago 12, Ill. Suspended and base-mounted models are illustrated with diagrams.

The Gryoset screens, working by a positive eccentric action, are readily adjustable in the field to any one of eight stroke settings ranging from zero to 3/8 inch.

The literature describes the char-

acteristics of the screens, for use in scalping, grading, and for separating water from aggregate.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 827.

SAVE hours every day—
days every month... with

MILLER Tilt-Top
2 minute
loading!



MODEL "B" 10 TON \$1175.*

The following equipment is optional and extra: hydraulic tilt control, two-speed winch, electric brakes.

*Plus freight and Federal Tax.

Time saved between every job means time added on the job. MILLER Tilt-Top's quick tilt loading enables ONE man to load or unload in less than two minutes... spend the extra time gained in profit-making operations on the next job. With its better maneuverability, easier backing, fast trailing and quick loading—MILLER Tilt-Top's the ideal extra trailer for extra production. Standard oak platform is 14' x 8', optional 16' available. SEE YOUR DEALER OR WRITE

MILLER
research engineers
456 S. 92nd Street, Milwaukee, Wis.



It's Barnes Again

ON ANOTHER TOUGH ONE!

PUMPING 36,000 G.P.H. AT 130 FEET OF HEAD

Here is really a tough one! With the discharge lines running straight up for 100 feet and then taking off at an angle for 20 more feet—these two Barnes 90M Self-Priming Centrifugal Pumps are doing an outstanding job of controlling the water level in this gypsum quarry of the Celotex Corporation at Port Clinton, Ohio.

To make the job even tougher, the water is high in sulphur content and laden with grit and silt. Yet these Barnes pumps have been on the job day-in-and-day-out—one pump for 7 years—the other for 3 years. Maintenance has been practically nothing—only to shim the impeller of one pump to bring it within recommended clearances.

So it's Barnes again on another tough one. And if Barnes is tops on the tough jobs—think what a buy they are for the every day, ordinary de-watering jobs.



The Barnes Line of Self-Priming Centrifugals ranges in suction and discharge sizes from 1-in. to 6-in.—with capacities from 2,000 to 90,000 G.P.H. Choice of Gasoline, Diesel, Electric or Pulley Drives.



★ ★ ★ BUY THE BEST... BUY BARNES ★ ★ ★

PORTRAIT IN PRINT

His own career

Blitz' Biggest Building Job

By BILL DARDEN

TWO YEARS AGO, Joseph Blitz shaved off his mustache. After all, it had long since served its purpose. And when you come right down to it, even a man in his early 40's is more inter-

ested in looking younger than he is in appearing older.

C&E Staff Photos



Now a mustache may not seem a very important item, but 28 years ago young Joe Blitz decided it was vital. He must have been right, too, for it launched him early on a career that is in the best Horatio Alger tradition. Today, at 44, he is president of his own construction firm, Joseph P. Blitz, Inc., of New York City, a thriving young outfit that is doing business at the rate of about \$15 million volume a year.

Blitz tells the mustache story with quiet amusement. It seems that in 1924, at the age of 14, he went to work as an office boy for Tishman Realty & Construction Co., Inc., a big New York firm. He was an ambitious youngster, and after two years he went to Julius Tishman, then head of the company, and asked if he could handle a construction job. Tishman told him he was too young; no construction crew would take orders from a boy of 16. Whereupon Blitz raised a mustache ("It took me a year to do it") to appear older, and a year later went out on a job as timekeeper and assistant superintendent.

That incident is typical of this contractor's success story. It is a story of ambition and determination, of seizing opportunities when they came along and creating them when he could. And it is a story that is far

from finished, for Blitz has impressive plans for building his firm and getting a greater share of the construction business.

Though his manner is more like that of a self-assured lawyer or banker, Blitz is a field man all the way. Impeccably dressed and highly articulate on many other subjects besides construction, he is nonetheless no office contractor. Even today, with a growing business to manage, he visits each of his projects every two weeks. And he has surrounded himself with associates who are first of all men with field experience.

Attended Night School

For our purposes, his story begins in 1924 in New York City, where Blitz has lived all his life. His mother was widowed while Joe was quite young, and to help support the family he took the humblest job in the Tishman firm at an age when most boys are entering high school. But his formal education did not stop there. The goal of an engineering degree was already firmly established in his mind, and he began the long pull of attending night school. Years of perseverance paid off in 1940 when he received his engineering degree from New York University.

During those early years with Tishman, and after completing a five-year night school course at Jamaica High School, Blitz attended New

PAYLOADS...UP



COSTS...DOWN

with MARION Dump Trailers

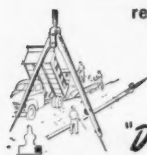
More and more, owners are finding their MARION dump trailers are "built to take it." The "proof of the pudding" is in repeat business and additional sales. Why? The extra attention given every job... the experience and pride in workmanship... the highest quality materials used... guaranteed performance and service... tells the story.

Marion all-welded trailer bodies are constructed to minimize sagging or twisting when loads are uneven or extra heavy.

Marion Telescopic hoists are made of heavy, seamless steel tubing polished to a mirror-like finish to greatly reduce wear. The jacks are connected to the frame in such a way as to prevent binding. They are designed to give equalized lifting power, regardless of the load. Stability is maintained by rigid underbody construction.

Marion Telescopic hoists are especially adapted for extra heavy loads. They provide the advantages of light weight compactness, low mounting and greater efficiency. Whether your requirements call for a standard or special body and hoist to meet individual problems, Marion's "Designed on the job" models withstand greater load-carry capacities...

require less maintenance and fewer man-hours per ton payload. See your nearby Marion Distributor for all details... or write direct... today.



"Designed on the Job"

MARION METAL PRODUCTS CO.

Marion, Ohio, U. S. A.

MARION
BODIES AND HOISTS

A complete line of standard and special Hydraulic Hoists and Dump Bodies To Fit Every Need

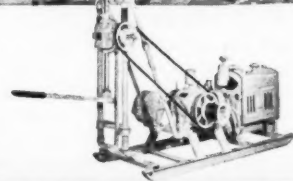
acker Portable, Power Operated Soil Sampling Rigs

Acker power operated soil sampling rigs combine into a compact, portable unit a standard power plant together with powerful hoisting winch and pump. Two models are available—Acker Model RGT for light duty and Acker RG for heavy duty service. These relatively inexpensive units are ideal for soil sampling, jetting and driving pipes or piles.

More for Your Money!

Add an Acker rotary drill head for rock coring and foundation test boring.

The Acker Model SK rotary drill head when combined with Acker RGT and RG rigs make an ideal unit for rock coring and foundation test boring. For complete information, write today for bulletin 28-C&E.



ACKER DRILL CO., INC.

725 W. Lackawanna Avenue
Scranton, Penna.

A complete line of Soil Sampling Tools,
Diamond and Shot Core Drills,
Drilling Accessories and Equipment.

CONTRACTORS AND ENGINEERS

York's Mechanics Institute, a free technical school founded in 1820 and believed to be the oldest free school in the country. Here he studied architectural design and engineering for three years, showing such promise as to win a prize for one of his designs. Later on, he took up college studies at New York University's School of Engineering.

During these years of night school—a total of 17 in all—Blitz was holding down a full-time job with Tishman. The fact that he was made construction superintendent at the age of 23 didn't make the school load any easier. For years he hurried directly from work to school each night for 4 hours of class. There was hardly even time for a cigarette, which probably explains why Blitz isn't a smoker today.

Fashionable as late dining may be, Joe Blitz didn't have fashion in mind when, for ten years, he never ate dinner before ten o'clock at night. There simply wasn't time for dinner when he had only about an hour between the end of his shift and the start of classes. Saturday he attended more classes, and while he reserved Sunday for study and class preparation, he managed to crowd in a little social life on Saturday night. "It was very difficult at times," he admits in recalling those crowded days of work and study, "but I guess my goal kept me going."

The experience he was gaining along with his education during those years stood him in good stead when he finally won his engineering degree. Although a 5-year period of professional "internship" is normally required before a professional engineering license is granted, the New York State licensing board waived the period for Blitz in view of his experience. After all, he had been making a name for himself in the industry all these years.

Blitz learned the construction game from the bottom up during his years with Tishman: "Fortunately," he says, "I was young enough to take orders—something I might not have

done had I been older and had a little more experience." But the situation had some amusing repercussions in his classes, where he often found himself arguing with professors who hadn't had nearly the field experience he himself was getting. "Much of the time they taught by the book and theory, and I had seen a number of those theories exploded when it came to an actual project."

Other Experience

When the depression hit in 1931, contractors suffered heavy losses along with the rest of the nation's industry. Nobody was building. Fortunately, Tishman owned and managed a number of apartment and office buildings which the firm had built in New York City, and Blitz was put in charge of maintenance of these buildings.

After World War II broke out, Blitz joined the U. S. Army Corps of Engineers as a civilian engineer, acting as liaison between army and civilian engineers, and coordinating the plans and requirements of each. He worked on such projects as Camp Kilmer in New Jersey, Camp Shanks in New York, and Halloran General Hospital on Staten Island, N. Y. The war over, he rejoined Tishman as head engineer.

There is an interesting construction angle to one project Blitz supervised for Tishman in New York City. In 1946, the firm erected a building for Universal International Films, Inc., at 445 Park Avenue. It was the city's first postwar skyscraper and the first fully air-conditioned office building in the metropolitan area. The building went up in record time, but not in spite of such handicaps as a truckers' strike.

Anticipating the strike, Blitz had the huge limestone spandrels delivered to the construction site long before they were to be placed. The big stones were placed on the floor levels at which they would be used, and were individually wrapped to

(Continued on next page)



In between visits to his construction jobs, Joe Blitz keeps in constant touch with jobs and superintendents by telephone. Pictures of his wife, Barbara, and two children, Steve and Alice, atop his desk complete this Blitz family portrait

JOB AFTER JOB, FRANKI FOUNDATIONS SAVE TIME, TROUBLE and MONEY!



FRANKI METHOD SAVED...

U. S. AIR FORCE
Limestone, Maine
\$200,000

PALISADES HOUSE
Bronx, N. Y.
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CHEMICAL CO.
Neville Island, Pa.
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McWILLIAMS FORGE CO.
Rockaway, N. J.
\$10,000

U. S. CORPS OF ENGINEERS
Tobyhanna, Pa.
\$7,500 ... to name a few!

See Our Catalog in SWEETS

FRANKI INSTALLATION PROCEDURE

Original foundation specifications for a modern catalytic cracking unit for Socony-Vacuum's East St. Louis Refinery called for 30-ton pre-cast concrete piles. The Lummus Co., of New York City, the consulting engineers, substituted Franki Displacement Caissons because extremely heavy vertical loads and high up-lift conditions had to be met.

A total of 119 Franki Displacement Caissons were installed, each providing a vertical load capacity of 120 tons and up-lift resistances up to 50 tons per unit. The Franki method made it possible to greatly reduce the cap concrete and install the foundation to shallower depths. Result: The Lummus Co. saved valuable time, trouble and materials, and Socony-Vacuum saved \$30,000!

Write to Franki Foundation Co., 114 E. 40th St., N. Y., for brochure describing Franki Methods and "Franki Facts" on this job.

FRANKI
FOUNDATION COMPANY

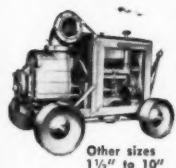
NEW YORK, N. Y.
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FIRM FOUNDATIONS FOR OVER FORTY YEARS



This Jaeger pumps all the water a 2" hose can handle



Other sizes
1 1/2" to 10"

Hi-performance Jaeger Model 2PN will actually pump all the water that can be pulled through a 2" suction line under average working conditions. Delivers 10,000 gph when operating at only 2400 to 2550 rpm (as much as 400 rpm below the speeds of similar ordinary pumps). Weighs only 160 lbs. on base, 190 lbs. on pneumatics. For complete information on this model or other Jaeger pumps, see your Jaeger distributor or send for Catalog P-4.

THE JAEGER MACHINE COMPANY

701 Dublin Avenue
Columbus 16, Ohio

LOADERS • COMPRESSORS • MIXERS • PAVING MACHINES

(Continued from preceding page)

protect them from stain or damage while other work was going on. The strike eventually did go into effect, thereupon holding up many a job, but Blitz was sitting high and dry.

It is foresight and ingenuity such as this that have marked his career—both with Tishman and in his own firm.

In 1949, Blitz and Paul Tishman, son of Blitz' first employer, formed their own company, doing general construction work to the tune of \$60 million. Among their projects were an office building in Garden City, Long Island, N. Y.; two sections of a huge labor-management-sponsored cooperative apartment building in Queens; and the first postwar air-conditioned apartment building in New York City. The Northshore Mart,

a shopping center in Great Neck, Long Island, also was the company's project.

Culmination of the Horatio Alger story came in July of 1953, when Blitz went out on his own and formed his own general contracting firm. The company in which he and Paul Tishman were partners is in the process of being dissolved, pending completion of several construction jobs.

Investment Package

To his own firm Blitz brought his wide experience and good reputation, plus some sound ideas for making an even greater mark in the industry. One of these on which he is presently working is a package construction deal for investors who are interested in acquiring rental property.

From his experience in managing

Tishman's realty holdings, Blitz has acquired a wide knowledge of mortgage financing, potential rental, and other aspects of property investment. He is combining this knowledge with his construction know-how to offer an unusual service to investors.

"Most people who have money to invest want something to show for it, something substantial like bricks and mortar," he points out. "But few of them think of building their own investment property. What I want to do is plan the whole investment project for them, so that when I build them a building they will know just what financing will be necessary, what rental they can expect, and any other financial factors involved."

While he is developing this combination service, Blitz is also constructing several large buildings in the New York area. The new Wisdom

Lane school in Levittown, Long Island, a 42-room one-story steel-and-concrete structure, was completed this fall—three months ahead of schedule. Brick work is completed on the two-story steel and reinforced-concrete Southside High School in Rockville Centre, Long Island. Steel work is under way on a \$2,750,000 high school in Garden City, also on Long Island; brick work is in progress on a 484-apartment project in Brooklyn; and work has begun on a four-story reinforced-concrete office and warehouse, with 350,000 square feet of space, for Miles Shoes on the west side of midtown Manhattan. His newest job is an 18-story office building at 545 Madison Ave., New York City. All of his contracts are in the \$1,500,000 or over bracket.

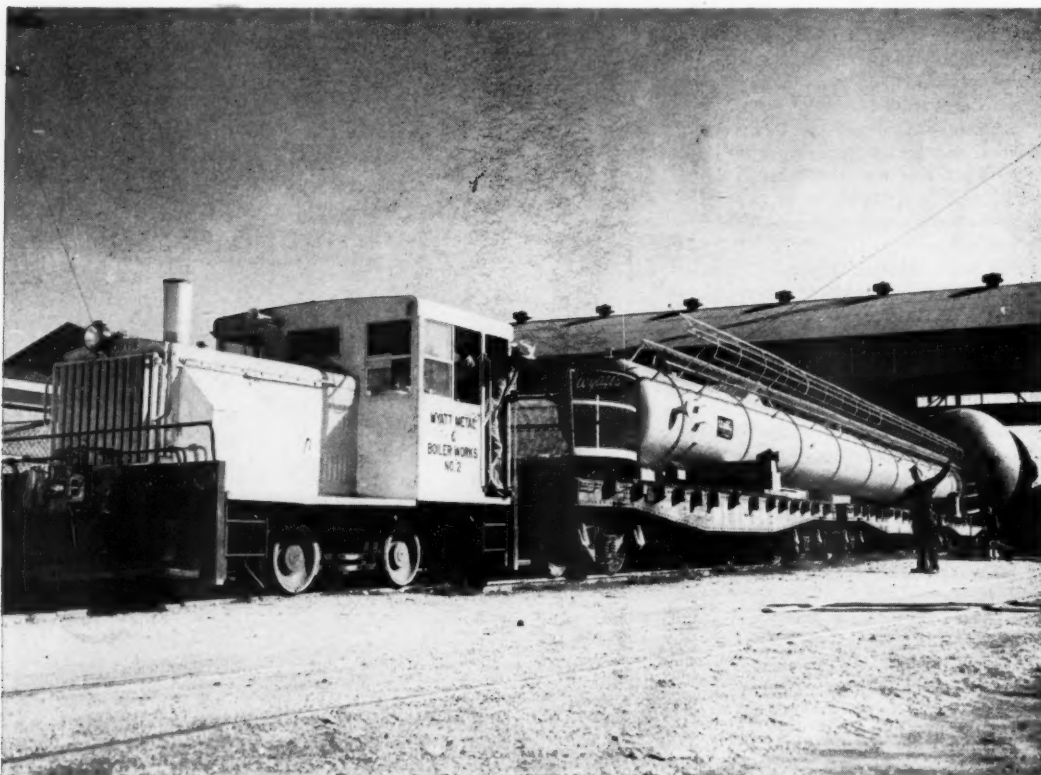
Bids Sparingly

Blitz gets a greater share (about 60 per cent) of the jobs he bids than do most contractors, probably because he bids only on those jobs he really wants and knows he can handle. That way, he says, the firm also avoids a lot of wasted time and money due to fruitless preparation of estimates. He makes private (invitational) bids whenever he has the chance, but says they contain a disadvantage in that the contractor must wait some time before the results are known. Most of his jobs have been in the New York area, but he has plans to work farther afield.

As the firm grows, its far-seeing president hopes to maintain a certain balance between public and private construction jobs. He feels this is the best insurance against a possible recession. "In good times, there is more private construction work, but in bad times the government alone is able to do much building." "Neither feast nor famine" is his motto on this score, preferring to be prepared for either condition.

Every other week, project men and foremen on all of the firm's jobs come to Blitz' Manhattan office for an all-day session devoted to discussion of job problems, progress, and plans. In between, Blitz visits the site of each project, personally inspecting the work and working conditions. He is insistent on the best safety measures. His relations with the various trade unions have always been satisfactory, he declares, pointing out that if he is naturally sympathetic to the problems of labor it may be due in part to the fact that his mother was a cousin of the late labor leader, Samuel Gompers. He is acutely aware that good labor relations cannot help but make for better production as well as pleasanter working conditions.

Good associates are like so many extra right hands, and Blitz has them in Gus Forsell, executive vice president of the firm, and Charles



No down time in 16 months!

That's the record of this 20-ton Plymouth Diesel owned by Wyatt Metal & Boiler Works, Houston, Texas

This modern Plymouth operates approximately 45 hours a week, hauling, switching and spotting railroad cars in the plant. The operator praises the Plymouth Torqomotive* Drive because it eliminates shifting gears under heavy loads, assures smooth, steady power for peak efficiency, and reduces rough starts and coupling shocks.

"There just isn't anything we have found wrong with our Plymouth," says E. C. Jones, Vice President of Wyatt. "Efficiency in switching has doubled, and we have lost no time due to repairs

or maintenance since we purchased the locomotive 16 months ago. It is far above anything we have had experience with."

If you are not enjoying the benefits of "Industry's Smoothest Switchers" write for illustrated catalog of the Plymouth line—models from 3 to 70 ton. Gasoline, Diesel, Diesel-Electric, with mechanical or Torqomotive Drive. PLYMOUTH LOCOMOTIVE WORKS, Division of THE FATE-ROOT-HEATH COMPANY, Dept. A-12, Plymouth, Ohio.

*TORQOMOTIVE DRIVE PLYMOUTH TRANSMISSION
WITH HYDRAULIC TORQUE CONVERTER

PLYMOUTH® TORQOMOTIVES

ESTABLISHED 1912

CENTRAL LINE CONSTRUCTION CO. INC.

ELECTRICAL CONTRACTORS

154 The Boulevard, New York 17, N.Y.

DECALS for

TRUCK DOORS

FORGEMAN BROTHERS

GENERAL CONTRACTORS

FINEST QUALITY & PERSONALIZED DESIGN

10 DAY DELIVERY

STORER DECAL CO.

1558 SO. MARKET WICHITA, KANSAS

FOR SKETCHES and SAMPLES WRITE TO...

CONTRACTORS AND ENGINEERS

Fisk, general outside superintendent. Twenty-five employees make up the permanent nucleus of the company, with the number of temporary employees running into the hundreds and depending on the jobs under construction.

Off the Job

With his wife, Barbara, a lovely brunette whose professional talents run along the lines of fashion designing, and his two children, Blitz lives in Manhattan's East 70's in a building whose construction he supervised for Tishman years ago. Eleven-year-old Steve takes a great interest in his father's firm and "knows all the terminology." His contribution to the business is in sealing the envelope when his father submits a bid, and then worrying until the contract is secured. Red-haired Alice, 7, doesn't take the business at all seriously. "She doesn't understand how I can be a builder when I don't actually construct the buildings myself, and I honestly think she is more impressed with a playmate's father who is a carpenter and really builds."

Blitz is a handsome and youthful 44, plays "a little golf" and just recently tried his hand (or foot) at water skiing. "I don't swim, so I made sure that Barbara, who's an expert, is close at hand." He gets along on four or five hours sleep a night—has done so since his school days. Photography is his principal hobby.

He is a member of numerous organizations, including the American Society of Civil Engineers and the American Society of Military Engineers.

And when he occasionally dines late these days, it is more for fashion's sake than out of necessity.

THE END

Portable Drill Rigs For Soil Sampling

■ A new bulletin which describes its line of portable powered soil-sampling drill rigs is available from Acker Drill Co., 725 W. Lackawanna Ave., Scranton, Pa. The two models available feature a powerful hoisting winch for jetting and driving pipe or piles. A lever-controlled positive-displacement pump is also included.

The power source can be either a gasoline, kerosene, or diesel unit; an electric or air motor; or direct power takeoff from a motor truck.

A special feature of these rigs is that a rotary drill head can be added at any time in the future. With the drill head added, the unit can be used for rock coring and foundation test boring, in addition to soil sampling.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 812.

Vulcan Tools

— FOR —

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Catalog Lists Accessories For Concrete Construction

■ A new catalog is now available from Conver Steel & Wire Co., Inc., 600 E. 132nd St., New York 54, N. Y., showing the company's complete line of concrete, masonry, lathing, and carpentry accessories. The booklet covers form ties, spreaders, high chairs, slab bolsters, and joist hangers in various types and sizes.

Several new construction aids are also illustrated. Among these is Conver's Simp-L-On furring system that attaches to brick, block, or concrete by a combination of shields, brackets, and V-strips. Also included are drawings of a new assortment of hangers for suspended ceilings.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 709.



THIS GOOSENECK-TYPE BACKHOE mounts on Little Giant 1/3, 3/8, and 1/2-cubic yard excavators. On this 1/2-yard unit, it digs to a depth of 19 feet 5 inches and dumps from a height of 8 feet 6 inches. Little Giant machines feature a ball-bearing turntable that eliminates hook or conical rollers and center pins. For details write to Little Giant Crane & Shovel, Inc., E. 16th St. and Howard Drive, Des Moines, Iowa or circle No. 828 on card at page 18.

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- 4 C. C. Plumb, Elmwood Station P. O. Box 65, Providence 7, R. I.
- 5 C. C. Plumb Portland, Connecticut
- 6 Albany Asphalt & Aggregates 75 State St., Albany, New York
- 7 Knight Paving Products, Inc. 1655 Union Rd., Gardenville, N. Y.
- 8 Knight Paving Products, Inc. Vine Street, Ithaca, New York
- 9 Knight Paving Products, Inc. 1980 E. Ave., Rochester 10, N. Y.
- 10 Knight-Bitumen Corp. Watertown, New York
- 11 Seaco, Incorporated 2700 Industrial Drive, Columbia, S. C.
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- 13 Pan-Am Southern Corporation P. O. Box 2, New Orleans 6, La. (Also serving Alabama and Mississippi)
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- 15 Bituminous Materials Co. P. O. Box 267, Terre Haute, Ind.
- 16 Wabash Valley Asphalt Co. Terre Haute, Indiana
- 17 Brookman Construction Co. 17th & Gharkey Sts., Muncie, Ind.
- 18 Fauber Construction Co. Lafayette, Indiana
- 19 Asphalt Materials & Construction, Inc. 960 E. 22nd, Indianapolis 2, Ind.
- 20 Ready-Mix Asphalt, Inc. P. O. Box 882, Fort Wayne 6, Ind.
- 21 Walsh & Ikeler R. R. #2, Gary, Indiana
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- 23 Bituminous Materials Co. 318 Atlantic St., Bay City, Mich.
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The Royal Arc Model 200A hand-carried welder.

New 59-Pound Welder Designed for Job Site Use

■ A hand-carried welder that weighs only 59 pounds and will weld with a 5/64 to 5/32-inch electrode operating on any single-phase 110-volt current

has been announced by Royal Arc Industries, Inc., Chillicothe, Ill. The Royal Arc 200A welder is handy for work on vehicles or other heavy

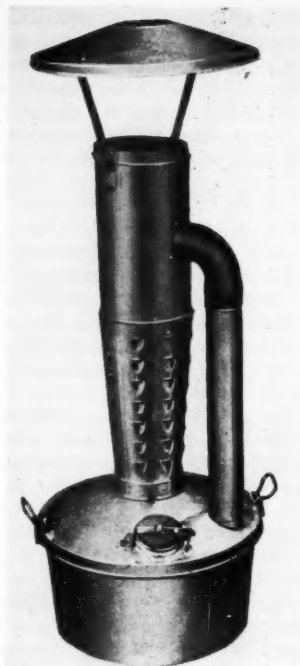
equipment, since it can be easily carried to the job and plugged into any standard power outlet or generator. The unit cuts, brazes, solders, pre-heats, and can also be used to hard-surface parts.

In addition to Model 200A, Royal Arc manufactures a heavy-duty unit, Model 400A. This model welds with a 1/4-inch rod on 220 or 440 volts, 50/60 cycle single-phase current.

For further information write to the company, or use the Request Card at page 18. Circle No. 800.

Osgood-General Appoints

Don R. Williams is the new division sales manager for Oregon, Washington, and British Columbia for Osgood-General, Marion, Ohio. Mr. Williams will work with Osgood-General distributors in his area.



The Scheu Hy-Lo line of oil-burning salamanders includes the new Model BJR, which has a short stack.

Oil-Burning Salamander Features Short Stack

■ A new oil-burning salamander has been announced by Scheu Products Co., P.O. Box 262, Upland, Calif. The Hy-Lo Model BJR has been designed especially for use where headroom is limited. It has a shorter stack and larger diffusion hood than the regular-type Hy-Lo oil-burning salamander which has been on the market for some years. The new model measures 53 3/4 inches in height, as compared to the regular Hy-Lo salamander's 62 3/4 inches.

Both salamanders are equipped with a gas-return stack by which the consumed gases are returned to the bowl. Hy-Lo salamanders produce from 70,000 to 140,000 Btu on one-half to one gallon per hour of any good-grade fuel oil.

For further information write to the company, or use the Request Card at page 18. Circle No. 801.

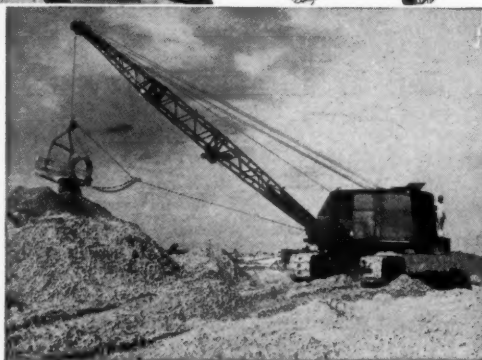
A \$5 or \$10 food package sent to a Korean orphan will make you feel good, too. Send contributions to CARE, 600 First Ave., New York.

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cuts costs to minimum!



Draglines operate under conditions that impose a combination of abuses not encountered in other rope service. The structure of Tuffy Dragline adapts itself to this special job. Tuffy's outer layer of wires offers the largest possible area to resist abrasion. Tuffy's inside structure is such as to give plenty of flexibility in casting. As a whole, this combination of pre-shaped strands gives extra-ordinary strength to withstand digging shocks and heavy line pulls.

Whether you're handling wet or dry dirt, sand, gravel or rock, Tuffy Draglines offer a way to cut rope costs substantially—enabling you to bid a little closer against tightening competition.

No More Complicated Specifications to cause confusion in ordering! Just state length, diameter and "Tuffy Dragline!" See for yourself how Tuffy can move more material for *you* for a longer time!



Tuffy Scraper Rope
Plenty flexible to withstand sharp bends... plenty stiff to resist kinking when slack... plenty tough to withstand drum crushing.



Tuffy Dozer Rope
A glutton for punishment on small winch drums and small sheaves. Available in 1/2" and 7/8" in 150' lengths.



Tuffy Hoist Line
Designed for hoist line use on all types of cranes, derricks and clamshells. Tough, flexible, passes safety checks longer.



Tuffy Slings
Extra flexible, extra strong because of a patented, 9-part, machine braided wire fabric construction.

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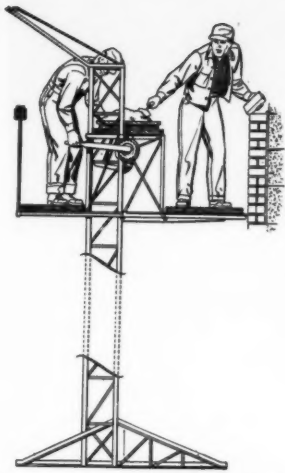



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CONTRACTORS AND ENGINEERS



The Morgen tower unit with an adjustable triple platform.

Triple Platforms Rise on Towers to Make Continuous Scaffold

■ Scaffolding that eliminates stooping, reaching, and moving from scaffold to scaffold can be set up quickly with equipment made by Morgen Mfg. Co., Yankton, S. Dak. The company offers a steel tower up which a cantilever carriage rides. The carriage is divided into a triple platform, so that the mason stands on one side and the helper on the other, with a knee-high material platform between.

A series of these elevating towers makes possible a long continuous scaffold that keeps masons at the proper work level. The scaffolding permits uninterrupted bricklaying to a one-story level.

For further information write to the company, or use the Request Card at page 18. Circle No. 802.

Office Machine Provides Calculation Short Cuts

■ Equipped with a double carriage, the new Model 66-N Monroe rotary calculator is capable of direct accumulation. With a flick of a button, an operator can accumulate the results of multiplications or divisions and automatically add or subtract



from the accumulation, with positive proof after each step.

The Duplex 66-N, described as a machine giving maximum short cuts, produces many answers as by-products to the regular calculating operations with no extra effort on the part of the operator.

For further information write to Monroe Calculating Machine Co., Inc., 555 Mitchell St., Orange, N. J., or use the Request Card at page 18. Circle No. 712.

DECEMBER, 1954

Auxiliary Transmission Now Has Power Takeoff

■ The Truckstell three-speed auxiliary transmission for trucks, announced recently, is now available with a built-in variable-speed power takeoff. This combination provides a unit that can be located beneath the truck cab, permitting a shorter wheelbase and easier access to the drive. In addition, power can be taken from either the front or rear end of the gear box.

Truckstell's three-speed auxiliary is designed to meet the need for extra power gears and gear splits in all popular-size trucks. Optional ratio

combinations are available. The power takeoff can also be supplied built into the Truckstell dual-axle-drive power divider and three-speed auxiliary.

For further information write to The Truckstell Mfg. Co., Union Commerce Bldg., Cleveland 15, Ohio, or use the Request Card at page 18. Circle No. 771.

Improved Sickle Grinder

■ A new and improved model of the Lantz swinging sickle grinder has been announced. The new model operates on the same basic principle as the grinder developed by Lantz engineers five years ago, but it is more

compact, occupies less vertical space, is easier to operate, and costs less.

As in the former model, the operating principle is the swinging grinding motion, whereby the stone is passed back and forth over the sickle section. The sickle lies on a spring-loaded table maintaining proper tension against the grinding stone.

Changes in the new model include a shorter lighter swinging arm and improved bearings. Power is supplied by a 1/4-hp 110-volt GE motor.

For further information write to the Lantz Mfg. Co., Inc., P. O. Box 124, Valparaiso, Ind., or use the Request Card at page 18. Circle No. 765.

All ADAMS Motor Graders now equipped with NEW Constant-Mesh Transmission



Plus these time-saving, work-producing features available in no other single grader—

- **8 FORWARD SPEEDS**
Up to 26 mph. for fast transport.
- **3 CREEPER SPEEDS**
Low as 1/4 mph. (optional),
- **4 REVERSE SPEEDS**
Up to 13 mph. Save time on shuttle work.
- **DUAL BRAKING SYSTEM**
Provides quicker, easier, safer stops, with less pedal effort.
- **RUBBER-MOUNTED ENGINE**
Floating power—no vibration transmitted to grader.
- **FOOT ACCELERATOR**
For easier, safer overland travel.

J. D. ADAMS MANUFACTURING CO.
Indianapolis, Indiana

Let your local ADAMS dealer demonstrate
the size best suited to your needs—75 to 140 H.P.

Make your next
motor grader an



Ohio Turnpike Takes Shape As Newest Toll Road Link

First section of \$326 million highway opens this month; contractors rush to complete 241-mile paving job in 1955



One of the grading operations of Western Contracting Corp., Sioux City, Iowa, is handled by this Caterpillar 80 scraper. The unit, near the end of its loading cycle, is pulled by a Cat D8 and pushed by an Allis-Chalmers HD-20.

C&E Staff Photos



IN TRANSFORMING a 241.4-mile strip of Ohio countryside into a modern superhighway, 25 general contractors and their many subcontractors have been staging what is probably the biggest road show of 1954. Although this is just another job to each of the individual contractors, the over-all project has attracted much attention. The staccato exhaust of hundreds of diesel-powered grading machines, the purr of a seemingly endless stream of material trucks, and the nightly blaze of artificial illumination dotting the 241-mile right-of-way from Pennsylvania to Indiana hint to the visitor that he

SPRING-MOUNTED MOGUL BASE ASSURES SNUG FIT FOR LAMP

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The Rugged, All-weather
SPOT or FLOOD

SILICON RUBBER RING GASKET
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Circle D guarantees you dependable illumination, even in wet, dirty, corrosive locations. Patented base and seal construction absorbs shocks and prolongs lamp life. This low-cost, rough-service, weatherproof flood or spot will outperform any other lamp regardless of price.

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Franklin & Smith, Inc., 137 Franklin St., Jersey City, JO 4-2510
Parr Electric Co., 40 Austin St., Newark, BI 3-2340

MASSACHUSETTS

Ellington Electric Co., 53 Daniels St., Millis, Millis 386

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Lloyd E. Holley Co., 1430 Liberty St., Harrisburg, HA 3-3161
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- ★ Weatherproof
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ASPHALT MIXING PLANTS 2000 TO 6000 LB. CAPACITY

20 years experience in design and manufacture of this truly balanced equipment, assures McCarter customers of standardized parts and minimum costs.

McCarter standard plants — designed and manufactured in their own works are readily adaptable to your special requirements. Individual units also available.

DRYERS (hot or hot & cold material, center outlet type)

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Our Sales Engineers will gladly consult with you!

Mc CARTER

REPAIRING AND REMODELING
OLD PLANTS—A SPECIALTY

IRON WORKS, INC. Norristown, Pa.

A Westinghouse-LeTourneau Tournapull D roadster lays down a thin layer of material to complete fine-grading on an approach-road fill. The Ford water truck at right moistens the grade before the final rolling.



Fill placed by the Tournapull is compacted by a Tampo self-propelled rubber-tire roller. This approach fill is for a local road which crosses the turnpike on a bridge and is part of the contract of V. N. Holderman & Sons, Inc., Columbus, Ohio.

is seeing one of the great displays of road-building technique.

By early summer of this year, the Ohio Turnpike Commission had awarded construction contracts totaling more than \$227 million. Activity on these contracts was geared to a schedule which called for opening an "expedited segment" to traffic the first of this month and opening the entire length of the turnpike by next October. Although the term "expedited segment" is commonly applied to the eastern 21.4-mile section, it might well apply to the entire project.

The first major construction contract, for the substructures of the Cuyahoga River bridges, was awarded in November, 1952, and the earliest roadway contract, in February, 1953. Some of the roadway sections were not under contract until well into this year. Despite this, 40 million cubic yards of excavation and 30 million cubic yards of fill or borrow

will be moved, 612 structures built, and 7 million square yards of concrete paving laid before next October.

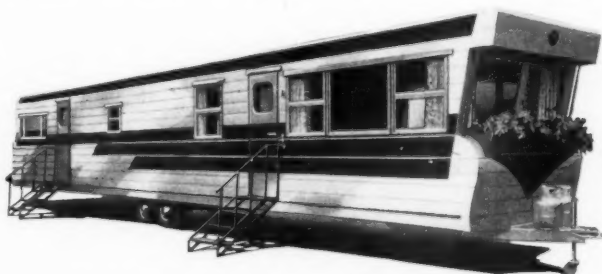
Design and Construction

For the initial planning, selection of right-of-way, and over-all supervision, J. E. Greiner Co., Baltimore, Md., was engaged as consulting engineer to the Ohio Turnpike Commission. Sixteen firms of consulting engineers were engaged to design and supervise construction of the 21 sections of the road, and they are working from field offices and laboratories on the job.

These 21 design sections were further subdivided to make 62 construction sections, each averaging a little less than four miles in length. A number of the contracts include more than one construction section. Most of the contractors carry on several operations at the same time, using several spreads of equipment

(Continued on next page)

Put PONTIAC On The Job



For Field Office — Drafting Room and Living Quarters

You can have superb "on the job" facilities with the Pontiac Chief. This soundly constructed unit is not only available in many sizes, from 26 to 51 feet in length, but interior arrangements can be built to your specifications to serve your particular purpose. You can have deluxe mobile homes for key personnel and their families—with sleeping accommodations for seven or eight, Westinghouse refrigerator with freezer compartment, automatic washer, complete bathroom with tub and shower, furnished with beds, mattresses, tables and chairs—and automatic circulating warm air heat.

Or you can have a shell—that you can furnish with your own drafting tables and equipment.

We are equipped to build what you want and need.

We would be happy to discuss this matter with you by letter or in person, at a time and place suggested by you.

The PONTIAC COACH CO.
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McKISSICK BUILDS A BETTER
BLOCK FOR EVERY PURPOSE.

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"Reflections on Deflections."

McKISSICK CONSTRUCTION BLOCKS

Check construction of
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Undue deflection creates
misalignments in bearings
causing premature bearing
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McKissick constructed blocks,
with a center or divider
plate between each sheave
eliminates deflection.



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McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

(Continued from preceding page)

at different locations. Many have sublet portions of a contract to other contractors.

Dividing the road into 21 design sections was also done for the sake of economy. Speedy construction not only means that the facility will be opened to the public earlier, but it also means financial savings to the turnpike authority. With \$326 million in bonds drawing interest at a daily rate of nearly \$30,000, it is important to make the highway a revenue-producing facility at the earliest possible date.

While the Ohio Turnpike Commission was authorized by the Ohio legislature and is an agency of the state, it receives no tax funds. Planning and construction of the pike are being done through revenue bonds which bear a 3¼ per cent rate of interest. Both interest and principal will be paid entirely from revenues, as will the road's maintenance and operating expenses.

Opening of the 21.4-mile expedited segment—now renamed Eastgate Section—the first of this month gave motorists a preview of the pike. When the entire expressway is placed in service about October 1, 1955, trucks and automobiles will be able to span the entire state of Ohio from Pennsylvania to Indiana on a modern expressway having no railroad or highway grade crossings, no curves sharper than 2½ degrees, and no ascending grades of more than 2 per cent. Vehicles will not encounter stop signs, traffic signals, or city traffic as they travel in the same direction on one roadway. Experts estimate that automobiles will save 3 hours and 23 minutes by crossing the state on the turnpike, while commercial vehicles will cut as much as 5 hours from the trip. Various savings in time are estimated for shorter trips between interchanges.

Beginning at the junction with the Pennsylvania Turnpike at the state line, the roadways of the new Ohio pike gradually diverge as the median widens from 10 feet to a minimum of 56 feet. Each of the two roadways consists of two 12-foot lanes of reinforced-concrete pavement 10 inches thick. Inside shoulders 8 feet wide and outside shoulders 10 feet wide are paved with 3 inches of penetration macadam.

The median normally consists of a depressed grassy area with 4 to 1 slopes from the edges of the shoulders, and a round-bottomed ditch. Each roadway has a V-crown sloping 3/16 inch per foot both ways from the center. Paved shoulders have a slope of 3/4 inch per foot. Drainage flows both ways from the center of each roadway, and the depressed median acts as a drainage ditch for half of both roadways.

In general, the turnpike hugs the natural ground most of the way, and is graded just enough for good drainage and stability. A maximum ascending grade of 2 per cent will permit trucks to travel the entire distance without changing gears. Descending grades are held to a maximum of 3.2 per cent. Horizontal and vertical curves will provide adequate sight distance.

Intersections

All roads intersected by the turnpike are carried over or under its

roadways by 282 bridges. Railroads are carried either over or under the pike by 41 bridges. In addition, there are 251 drainage structures, including bridges crossing four major rivers. The largest of these are the twin structures which reach 2,682 feet over the Cuyahoga River, the Ohio Canal, the B&O Railroad and a local road.

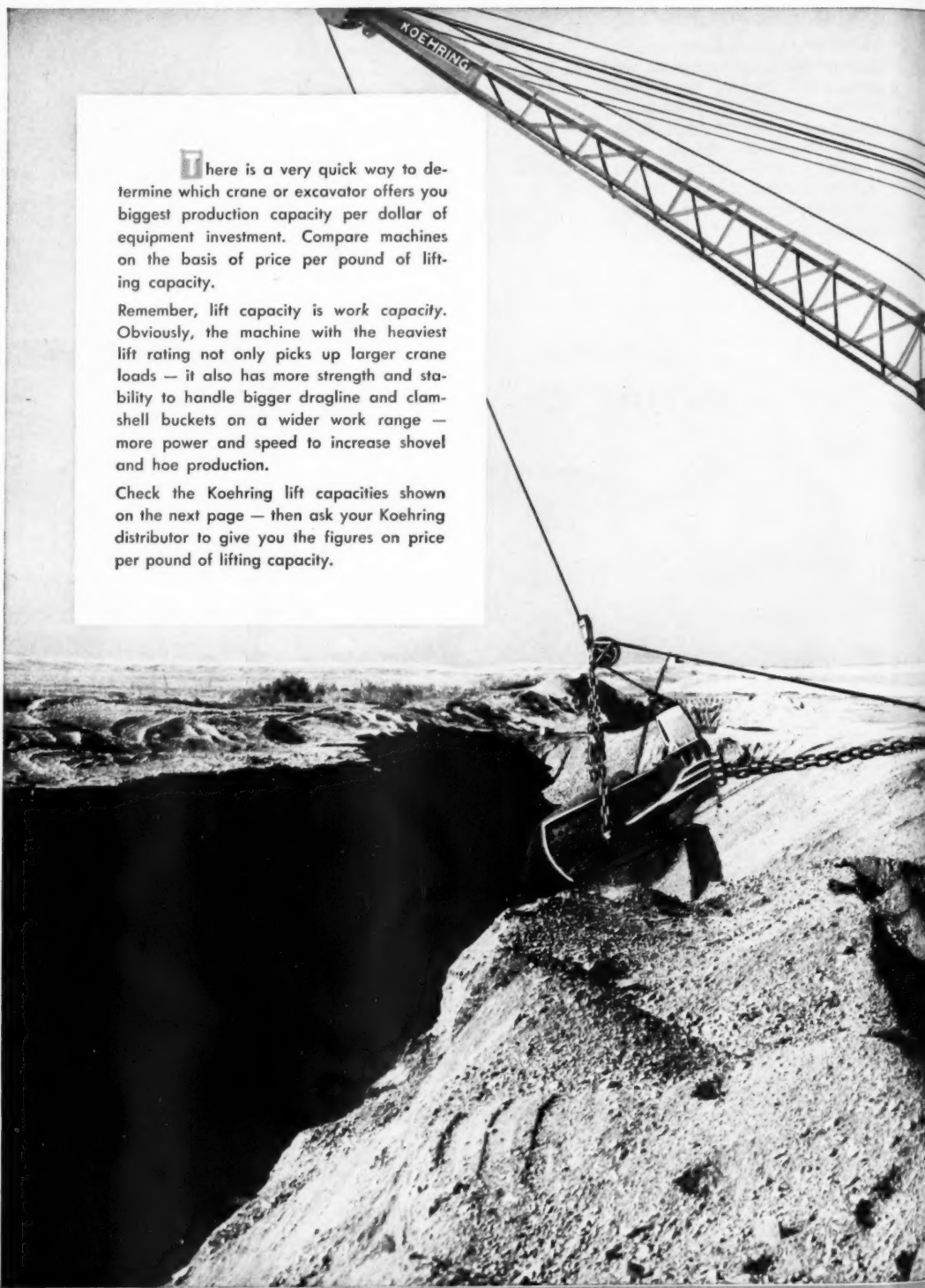
Most intersecting roads cross the expressway on bridges of concrete and steel which have almost become standard on expressways. The spans have concrete piers and abutments, steel girders, and concrete floors and parapets. Aluminum rails top the parapets. Abutments are set back on the approach grade with fills sloping down to the roadway to give an open appearance.

In some areas, because of topography, soil conditions, railroad cross-

ings, or other factors, the turnpike passes over intersecting roads. In these cases twin bridges are built to carry the two lanes of the turnpike. Where bridges follow each other in quick succession, the turnpike is sometimes carried on a high fill between the structures rather than dropping down to ground level and

then rising right back up to the next span.

Traffic may enter or leave the turnpike through 15 interchanges, each with a toll plaza located off the main roadway. Acceleration and deceleration lanes at these points facilitate a safe traffic flow. Service stations, restaurants, picnic areas,



There is a very quick way to determine which crane or excavator offers you biggest production capacity per dollar of equipment investment. Compare machines on the basis of price per pound of lifting capacity.

Remember, lift capacity is work capacity. Obviously, the machine with the heaviest lift rating not only picks up larger crane loads — it also has more strength and stability to handle bigger dragline and clamshell buckets on a wider work range — more power and speed to increase shovel and hoe production.

Check the Koehring lift capacities shown on the next page — then ask your Koehring distributor to give you the figures on price per pound of lifting capacity.

KOEHRING COMPANY Milwaukee 16, Wis.

Subsidiaries: JOHNSON
PARSONS • KWIK-MIX

CONTRACTORS AND ENGINEERS

Gradall, mounted on an International truck, handles excavation for a pipe culvert. Here the unit digs a trench through material which has been compacted for the roadway.

C&E Staff Photo

and other facilities for the convenience of travelers are planned for both sides of the road. Eight maintenance areas are planned for the storage of maintenance equipment and supplies.

Both sides of the entire right-of-way will require more than 2,500,000 linear feet of fencing, and nearly

1,300,000 linear feet of guardrail will be placed along the roadside.

Proposed tolls for the turnpike range from about 1¼ cents per mile for passenger cars to as high as 8.7 cents per mile for heavy trucks with full trailers. During the first year of operation it is estimated that a daily average of 39,000 vehicles will use the pike. Of this number, 21,684 or 55.6 per cent are expected to be passenger cars and 17,316 or 44.4 per cent trucks.

Completion of the Ohio turnpike will mark a major step toward a continuous toll road connecting Chicago and New York City. At the present time, construction is under way on the Indiana Toll Road which will connect with the Ohio Turnpike at the Indiana line and terminate at the outskirts of Chicago. In the east, a bridge is soon to be constructed

across the Delaware River north of Philadelphia to connect the Pennsylvania and New Jersey turnpikes. When these projects are completed, probably in 1956, it will be possible to travel 812 miles from New York City to Chicago entirely by turnpike.

Personnel

Members of the Ohio Turnpike Commission are James W. Shocknessy, O. L. Teagardner, A. J. Allen, J. Gordon McKay, and S. O. Linzell. Executive director for the commission is Robert S. Beightler, and chief engineer is T. J. Kauer. Edward J. Donnelly and John J. Jenkins, Jr., are partners in J. E. Greiner Co.

THE END

Additional Ohio Turnpike articles are included in this issue. The next one appears on page 46.

Highway Engineering Covered in New Text

A 600-page reference work setting forth the most up-to-date practice in highway construction and containing much new material for the highway engineer or contractor has been published by John Wiley & Sons, Inc., New York, N. Y. Titled "Highway Engineering", the book treats all phases of the subject from planning, financing, and design through construction to maintenance.

Designed primarily as a text for junior and senior college courses in highway engineering, the book also offers detailed treatment of new developments in highway technology as an aid to practicing highway engineers. Pertinent research findings, as well as current studies of methods, are covered. Various base and surface courses are discussed, and a chapter is devoted to highway maintenance. There is a complete index of subjects treated.

Written by Clarkson H. Oglesby, professor of civil engineering at Stanford University, and the late Laurence I. Hewes, chief of the western headquarters of the U. S. Bureau of Public Roads for many years, the book is priced at \$8. It may be ordered from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Safety, Traffic-Control Device Adopted in Conn.

As the result of a recent series of experiments and observations, the Connecticut State Highway Department has adopted a plan by which a white line is to be applied to the right-hand or outer edge of both sets of lanes on the Merritt and Wilbur Cross parkways. The line on the outer side of the travel way is expected to provide greater safety in inclement weather and a more uniform pattern of vehicle travel.

The tests, which were made both during the day and at night, involved some 11,289 vehicles and were conducted at six locations. Tests with the painted line, with a reflectorized line, and without any line at all were analyzed, and a comparison of the three sets of tests indicated that a white line at the edge of the road tends to keep vehicles and operators in the center of the lane. In addition, it was determined that vehicles moved at relatively steady rates of speed and that the differentials between day and night speeds were reduced by the presence of the outer line.

Improved Truck Tire

A new U. S. Royal truck tire has been introduced by the United States Rubber Co., Rockefeller Center, New York 20, N. Y. The tire has a wide rugged five-rib tread, with extra-sharp tread edges and irregular grooves for improved traction on slippery surfaces. The area of contact with the highway is relatively large, which helps to reduce uneven wear.

The new tire is being made in a wide range of sizes from 6.00-16 with 6-ply rating through 10.00-22 with 12-ply rating.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 697.



Check price
per pound
of lifting
capacity

KOEHRING MODEL	SIZE DIPPER	KOEHRING LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping load)		PRICE PER POUND OF LIFT CAPACITY*
205 CRAWLER	½-Yd.	20,000 lbs.	30-foot boom at 10-ft. radius	?
205 ON RUBBER	½-Yd.	30,000 lbs.	25-foot boom at 12-ft. radius	?
304 CRAWLER	¾-Yd.	27,800 lbs.	35-foot boom at 12-ft. radius	?
304 ON RUBBER	¾-Yd.	50,000 lbs.	30-foot boom at 10-ft. radius	?
405 CRAWLER	1-Yd.	40,000 lbs.	40-foot boom at 12-ft. radius	?
605 CRAWLER	1½-Yds.	72,300 lbs.	50-foot boom at 12-ft. radius	?
1005 CRAWLER	2½-Yds.	159,000 lbs.	50-foot boom at 12-ft. radius	?

*Figures available on request—ask your Koehring distributor for them.





Working in one of the deepest rock cuts on the pike, a Marion shovel with 7½-yard dipper loads sandstone into a 30-ton Mack truck while a Cat D8 dozer cleans up. At left, two failing drills sink blast holes into the rock. C&E Staff Photos

Giant Earthmovers Build Turnpike Grade

Scrapers, shovels, and loaders share excavation of 40 million cubic yards of material in Ohio



In grading operations on the east approach to the Cuyahoga River bridge, a Caterpillar DW-20 scraper is push-loaded by an Allis-Chalmers HD-20 tractor.

WORKING 20 HOURS a day six days a week, a fleet of equipment valued at \$4 million is grading one of the toughest sections of the Ohio Turnpike. This is a 9.3-mile stretch just east of the Cuyahoga River near the village of Boston Heights and about ten miles north of Akron. It includes one of the turnpike's deepest and longest cuts—3,600 feet in length and 82 feet in depth—and the project's highest fill, 110 feet.

Western Contracting Corp., Sioux City, Iowa, the general contractor for this section, is using the largest individual pieces of equipment to be found on the entire Ohio Turnpike construction project: a Marion 151-M 7½-yard shovel and a Marion 151-M dragline with an 8½-yard Hendrix bucket.

The big cut consists primarily of sandstone under a 10-foot layer of earth and some shale. The rock is hard and must be blasted ahead of the loading operation. This cut is 200 feet wide at the base to accommodate the wide roadways, generous shoulders, wide ditches, and planted median of the turnpike. Maximum width at the top of the cut is 340 feet. Not far away is the approach to the Cuyahoga River bridge where 1,500,000 cubic yards of material is being placed in a single fill.

Throughout the length of the new Ohio toll project, contractors are moving approximately 40,000,000 cubic yards of excavated material—an average of about 164,000 cubic yards per mile for the road's 241 miles. The 9.3 miles of Western's contract contains 4,700,000 cubic yards of excavation, or three times as much per mile as the over-all average. About 1,200,000 yards of this is rock.

(Continued on next page)



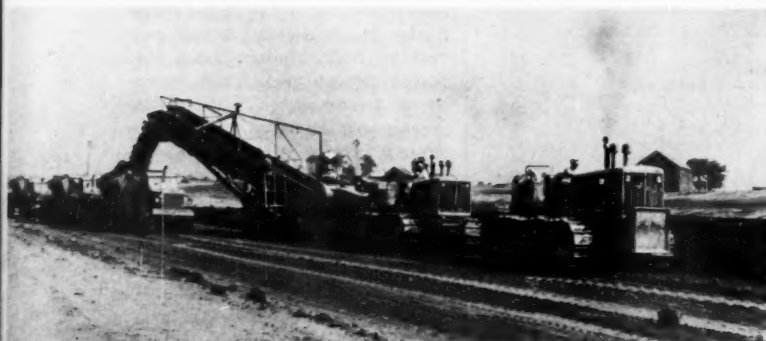
A Koehring dragline, with Hendrix bucket, digs trench for an Armco 48-inch paved invert culvert pipe. The Jaeger compressor, left, supplies air for the backfill tampers.



Assisting a Euclid scraper to unload in the waste dump is an experimental Euclid rubber-tire tractor equipped with a dozer. The tractor uses both front and rear wheels for steering.



Loose dirt is dumped around the culvert pipe by a Hough HM Payloader. The contractor, Western Contracting Corp., Sioux City, Iowa, also used the Payloader to carry and place the pipe.



On a roadway cut near the junction of the turnpike and State Route 14, two Allis-Chalmers tractors pull a Euclid loader. Bottom-dump Euclids line up to haul the material to the fill.



International TD-24 and Allis-Chalmers HD-20 tractors team up in a double push-loading operation to assist a Euclid scraper to pick up a heaping load of material in 40 seconds.

(Continued from preceding page)

Contract price for the section is \$10,030,453. Notice to proceed was given September 21, 1953, and the grading is now well enough along so that paving can proceed whenever weather permits in the spring.

Drill and Blast Rock

Most of Western's efforts have been concentrated on the heavy grading in the western part of its section. Work on the big rock cut began as soon as the earth overburden had been removed. The contractor assembled two special rigs for drilling the blast holes. Each of these consists of a Failing rotary drill mounted in a 40-foot tower on the rear of a Euclid truck chassis. The tower can be lowered and folded for transporting. The drill is operated hydraulically, with power furnished by the Euclid engine through the power takeoff. An Ingersoll-Rand 600-cfm Gyro-Flo compressor is mounted crosswise on the truck frame immediately behind the cab, and it supplies air for blowing sand out of the drill holes. A third and somewhat similar machine with a Mayhew rotary drill was added this fall.

Using Hughes roller-type rock bits, these drill rigs punch three 6-inch holes per hour to a depth of 23 feet. Bits are changed after about 700 feet of drilling in hard sandstone, but they give even longer service where the material is softer. Holes are spaced on about 15-foot centers both directions. They are loaded with Tungite No. 1 T.B. blasting powder at the rate of 100 pounds per hole. Charges are usually detonated between shifts in the afternoon when a minimum of workmen are in the vicinity.

Material loosened by the blast is loaded by the Marion 151-M 7½-yard shovel into a fleet of eleven 30-ton Mack end-dump trucks. When necessary, these are augmented by 25-ton bottom-dump Euclids. When the job was visited by C&E, sandrock was being hauled about a mile down the grade where it was being used for a "rolling surcharge" in carrying a fill through an area of poor subsoil. At other times, most of the rock excavation has gone into the big fills to the west of the cut.

"Rolling Surcharge" Fills

In a swampy area where the subgrade lacks the stability necessary to support the turnpike grade, the "rolling surcharge" method of placing the fill is being employed. In a specific case, the topsoil, vegetation, and the top 8 to 10 feet of muck were removed by the Marion 151-M dragline equipped with a 90-foot boom and using an 8½-yard Hendrix drag bucket. This material was loaded into 25-ton bottom-dump Euclids and hauled to a waste dump. Both of the big Marion machines are electrically operated. The shovel working in the rock cut takes its power from a nearby Ohio Edison Co. line. In the swamp excavation, however, no high-power line was conveniently available, and power was supplied by a 625-kva portable generator. This big generator was mounted on a multi-wheeled trailer and powered by a GM diesel engine.

Immediately after muck was excavated, sandstone fill was dumped into the hole. Starting at one edge of

the soft area, dozers built fill material to a height approximately 15 feet above the finished roadway grade. As this surcharged fill was pushed across the area, the soft subgrade material literally boiled up ahead of it. This material was removed by a Marion 111-M dragline using a 5-yard Hendrix bucket. Some of the material was cast to the side, and some was loaded into bottom-dump "Eucs" to be hauled to the waste dump.

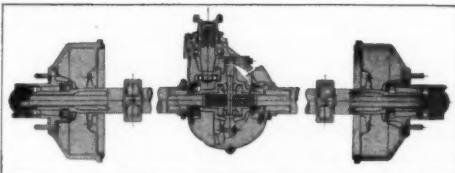
Most of the sandstone was delivered by the 30-ton Mack trucks, which backed over the fill and dumped their loads at the lead edge. Fill delivered in bottom-dump Euclids was pushed over the edge with dozers. Behind the high surcharge of the lead



At the Maumee River bridge approach near Toledo, a Rome disk pulled by a Caterpillar D6 tractor loosens the surface of one layer of fill to provide bond for another lift about to be placed.



GLUTTONS FOR PUNISHMENT—CHEVROLET TWO-TONNERS with HYATT BARREL BEARINGS!



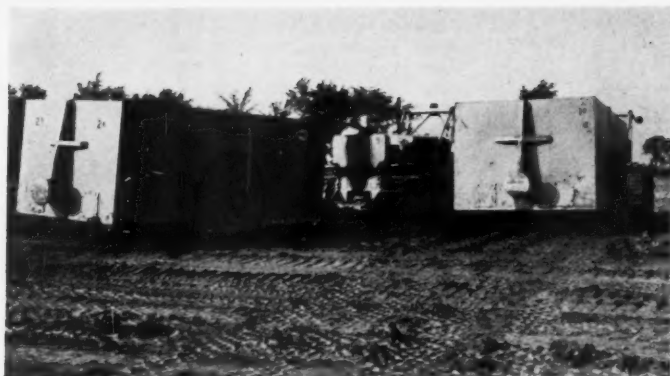
6 Barrel Bearings used in this Chevrolet 2-ton truck rear axle

Sheer stamina—the ability to "take it" year after year with minimum maintenance and maximum economy—has made this two-ton Chevrolet one of the world's most popular trucks. And in its rear axle—focal point for brutal punishment—you'll find six HYATT Barrel Bearings taking the brunt of it. Their ability to provide high load capacity with low friction—to automatically compensate for shaft deflection—has been conclusively proved in millions of miles of this troublefree truck service. If you have a similar bearing problem, take a tip from Chevrolet trucks—and hand it to HYATT Barrel Bearings—Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

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ROLLER BEARINGS



Two Ferguson 50-ton rubber-tire compactors solidify material as another 1-foot lift of clay and silt is placed on the fill. The Rome disk will follow to scarify the material. Three joint-venture firms are handling grading in this section.

C&E Staff Photos

(Continued from preceding page)

edge of the fill, the dozers kept moving the material ahead and cutting the grade back down. The workhorse of this operation was a twin Allis-Chalmers HD-20 tractor—which consisted of two HD-20s mounted side-by-side and using only the outside tracks—with a huge dozer blade. Several Caterpillar D8 tractors with dozers and an HD-20 pusher were also at work on this fill. With a substantial amount of the soft material displaced and the remainder compacted by the heavy surcharge of the fill, it is assumed that the subgrade will support the somewhat lighter load of the finished section.

Drill Relief Wells

Poor subgrade of a much more serious nature was encountered on the

steep slope which must carry the east approach to the Cuyahoga River bridge. When the hillside was stripped preparatory to building the fill, evidence was found of slides having occurred on the slope. Last November, water erupted near the toe. Engineers of Howard, Needles, Tammen & Bergendoff, Kansas City, Mo., consulting engineers for this section, and J. E. Greiner Co., Baltimore, Md., consulting engineers to the Ohio Turnpike Commission, immediately began test drillings throughout the hillside and revised plans in an attempt to stabilize the material.

A series of 100 relief wells were drilled in the hillside to relieve the pressure of underground water. The entire slope was then blanketed with a 6-foot layer of crushed rock in which a system of 6-inch perforated drainage pipe was incorporated. A series of 20 or more piezometer tubes have been installed in the hillside to indicate the levels of underground water sources during and after construction. Readings of these piezometers will show whether additional relief wells or other corrective devices are needed. This situation provided a considerable amount of extra work for the contractor and also caused a long delay in completing of the bridge approaches.

To assist in shoring this troublesome steep slope, waste material from a nearby excavation was deposited at the toe. This material was moved by a motorized scraper spread consisting of five Euclid and five Caterpillar DW20 scrapers. Three Allis-Chalmers HD-20 tractors pushed the scrapers in the cut, sometimes singly, often in tandem, and occasionally all together. All three are equipped with front and rear pushing plates to enable them to push each other.

On the fill, two Caterpillar D8 dozers kept the material straightened out and assisted the scrapers when necessary. An experimental Euclid rubber-tire tractor-dozzer was also at work on this fill. The long, steep, winding haul roads were maintained by a Caterpillar No. 12 motor grader.

Further east, where conditions approximate routine highway construction, the contractor was building roadway with a spread consisting of a Euclid loader pulled by two Allis-Chalmers HD-20 tractors, and a fleet of nine bottom-dump "Eucls". On the fill were three Caterpillar D8 tractors with dozers, one pulling a Gebhard sheepsfoot roller. This spread normally took material from borrow pits, and hauls were relatively long. Occasionally, it made roadway cuts.

Another spread working in this area consisted of a twin-powered Euclid scraper, two Allis-Chalmers HD-20 tractors drawing Caterpillar 80 scrapers, a Cat D8 dozer, and an HD-20 pusher. Each spread on this section had at least one Caterpillar No. 12 motor grader to maintain the haul roads and touch up the finished grade. Each spread also carried one or more light towers to provide illumination for night operations.

These towers are mounted on a heavy steel frame supported on three rubber-tire truck wheels. Telescoping front axles permit the wheels to be spread wide for stability when the tower is raised, or narrowed to roadway width for transportation. The

CONTRACTORS AND ENGINEERS

GREATER WORK CAPACITY
With LOWER EQUIPMENT INVESTMENT



HOPTO
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MODELS AVAILABLE
 SPC—Shovel at right
 TM—For mounting on any 1 1/2
 Ton Tractor or Larger
 CTM—For Rear-End Mounting
 on Crawler Tractors
 SPT—Self-Powered Trailer Type
 PTO—Power Take-Off Powered
 Trailer Type

EASY-TO-OPERATE HOPTO LOADS, TRENCHES, EXCAVATES!

Here's the low-cost, easily operated unit you have been waiting for! The new and improved Model SPC combines all the features of the other work-hungry HOPTO models plus the light bearing pressure of 3 pounds per square inch necessary for work on swampy soils. Bearing pressure of 17" track pads is so light that unit may be moved across landscaped areas without disturbing turf.

Complete unit is Badger built. The 20% overload safety factor and the built in by-pass and relief valves protect the completely hydraulic Model SPC. Four easily-actuated levers conveniently banked for the operator control every movement of HOPTO from 190° swing to 16'4" reach... from

11'4" digging depth to hydraulic control of bucket that permits 'straight-down' excavation for foundations, septic tanks, etc.

In average to heavy soils, the Model SPC has an hourly trenching capacity of 60' of 2' trench 6' deep. Fast cycling and ease of operation gives HOPTO a loading capacity of 40 cubic yards per hour with a quarter-yard bucket. Larger buckets are available for handling bulky materials. With backhoe, HOPTO has a loading clearance of 8'6"; 10' clearance with shovel bucket.

OPTIONAL EQUIPMENT MAKES HOPTO A MOBILE CRANE

A crane boom to replace dipper stick converts HOPTO into a mobile crane for spotting timbers, trusses, steel... for placing heavy equipment, spotting culvert sections, unloading bulky equipment. Crane boom may also be equipped with hydraulically controlled grapple with a loading clearance of 18'. Same attachments are available for TM Model shown at left.



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for complete information on the model best suited for your particular needs. HOPTO's low cost holds down equipment investment; helps you maintain or exceed schedules!

BADGER MACHINE CO.

Dept. E

telescoping mast, which folds down onto the frame for transportation, can be raised to a height of 60 feet by a combined hydraulic and cable device which is powered by an electric motor driven from the light plant. One man can raise or lower the mast. The eight 1,500-watt flood lamps mounted on the top of each tower can be adjusted to cover any desired area. Each tower carries a Caterpillar D311 or D315 diesel generator set to provide power.

Culverts and other drainage structures are an important part of the work on any section of the turnpike. Western used three draglines to dig trench and place pipe—a Koehring 605, a Bucyrus-Erie 22-B, and a Bucyrus-Erie 54-B. A Hough HM Payloader assisted in transporting and lowering pipe and in placing backfill. Where culverts passed under the roadway, backfill was tamped around the pipes with air-tampers.

While the equipment of Western Construction Corp. was fairly well spread out over the job, some of the other sections had much heavier concentrations. One of these areas was at the east approach to the Maumee River bridge, where the general contractor is a joint venture of Badgett Mine Stripping Corp., Central States Construction Co., and Soo Constructors, Inc. Equipment concentrations occurred on the fills between structures where the turnpike passes over intersecting highways, and on the approach to the Maumee River bridge.

One spread consisting of eight Euclid scrapers, one Tournapull, and two Caterpillar DW21 scrapers operated from a borrow pit on one side of the right-of-way. One International TD-24 and two Allis-Chalmers HD-20 tractors served as pushers for the scrapers. On the opposite side of the turnpike, a Euclid loader pushed and pulled by two Allis-Chalmers HD-20 tractors was loading a fleet of bottom-dump Euclids. Both spreads were hauling to the same fill where two Caterpillar D8 dozers and an Allis-Chalmers HD-20 with a Gar Wood dozer were spreading the material as fast as it arrived.

The 12-inch lift of fill advanced so rapidly before this fleet of equipment that the dump men were kept on the run spotting the loads. As the lift was carried ahead, a Rome disk pulled by a Cat D6 tractor broke up the lumps and aerated material that that was too wet. Two Ferguson 50-ton rubber-tire rollers towed by Cat D8 tractors then took over and compacted the loose material into a solid lift. Before another lift was placed, the surface of the compacted lift was scarified by a Rome disk to provide bond between the layers. Although there was a continuous roar of diesel engines and apparently very heavy traffic on the fill, there was no confusion and no lost time with the equipment. Scrapers and "Eucls" roared to the place indicated by the dump men, dropped their loads on the run, and sped back to the borrow pits.

Personnel

With as many as 375 men scattered over the 9.3 miles of work, the Motorola mobile radio system saves Western many hours of time. Three base stations are located in the office, as are two equipment repair shops. Ten mo-

bile units are carried in the cars and pickups of supervisory personnel. The system is in almost constant use during both the day and night shifts.

Project manager for Western Contracting Corp. is C. W. Barnhart. Carl Collins is general superintendent, and Bob Cressman, night superintendent. Equipment superintendent is H. Holderby, and master mechanic is Dorsey Gindery. Construction engineer for the contractor is W. C. Harlow. Consulting engineer for this section of the Turnpike is the firm of Howard, Needles, Tammen & Bergendoff. Project engineer is Browning Crow.

Construction of all bridges in the project was sublet to Al Johnson Construction Co., Minneapolis, Minn. Placing of the granular base material was sublet to H. D. Youngman, Contractor, Inc., Baxter Springs, Kans.

A Barco rammer compacts backfill material being placed in a culvert trench by an Allis-Chalmers HD-5 tractor with Tracto-Shovel. This drainage work is part of the contract held by S. J. Groves & Sons Co., Springfield, Ohio.

Western is doing all the grading and drainage work, and will pave these sections.

Chet Badger is general superintendent for the contractor on the Maumee River bridge approach. Superintendent of the second shift is H. A. Tedder. Sanzenbacher, Morris & Taylor and Brookhart & Tyo Inc., Harrisburg, Pa., the consulting engineer for the section, and S. R. Rusiackas is project engineer.

THE END



See next page for another article on the Ohio Turnpike.

MONOTUBES

on the Ohio Turnpike

All along the 241-mile Ohio Turnpike you'll find steel Monotubes—1,322 Monotube lighting poles for entrance plazas and interchanges, 44½ miles of Monotube foundation piles for structures, and self-supporting Monotube antenna masts at each of the 15 interchanges and the

two terminal gateways for radio communication.

Take the tip from leading contractors and engineers . . . specify Union Metal Monotubes. For further information, write today to The Union Metal Manufacturing Company, Canton 5, Ohio.*

Monotube Lighting Poles
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UNION METAL



A typical paving operation on the Ohio Turnpike. Two Koehring Twinbatch pavers are placing concrete for the entire 24-foot-wide roadway at one time.

C&E Staff Photos



A Jersey spreader attached to a Caterpillar D7 tractor puts down granular base material on the subgrade.



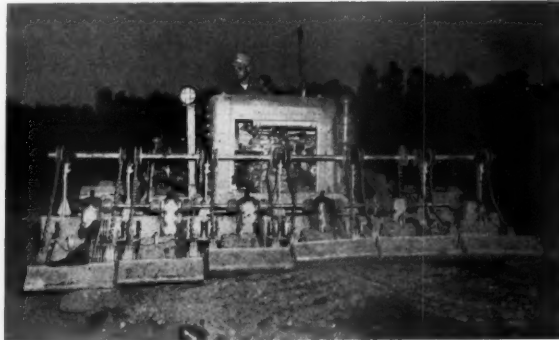
A workman uses a Thor pin driver powered with air from an Ingersoll-Rand Gyro-Flo compressor.



A 2,000-gallon tank truck sprays water across the 12-foot lane ahead of the Jackson vibratory compactor.



One of three Maginniss vibrators on the Jaeger spreader works concrete around a joint assembly.



This International Vibro-Tamper is used to compact the base material into a 6-inch layer. Two passes are sufficient for compaction.



The base is brought to proper grade between the forms by a Buckeye Finegrader after a motor grader has scarified the surface.



A Dumpcrete mounted on a Ford F-8 truck deposits a 4-yard load of concrete on the base. Dumpcretes haul from a central mixing plant.



Behind the spreader, a Heltzel Flex-Plane finishes the slab. A longitudinal float and a burlap drag complete the finishing train.

Paving Methods Vary

Most contractors use pavers, but this one hauls concrete from central mixing plant in dump units

By RALPH MONSON, Field Editor

TRAVELING the length of the Ohio Turnpike this past fall was like witnessing a showing of American concrete-paving techniques. More than 20 contractors, whose home offices are scattered from New York and the Carolinas to Nebraska and Texas, began paving operations on their respective sections of the Buckeye toll road in the late summer and early fall.

Although the completed paving section will be uniform throughout the 241 miles of the turnpike, the equipment used by the contractors and their methods of operation vary considerably. Some of the contractors have chosen to place the 24-foot roadway section in a single operation, sawing the center joint later. Others pave separate 12-foot lanes. Some use two finishing machines and two longitudinal floats. Others use one of each. Some employ their own shop-made finishing devices.

Specifications for all the jobs are alike, however. The paving section of the separate roadways in all cases consists of a slab 24 feet wide and 10 inches thick, resting on a base course of 6 inches of compacted granular material. In all cases the finished roadways are crowned $2\frac{1}{4}$ inches. Normally the slab is reinforced with 6 x 12-inch 0/4-gage welded wire fabric. Mats are laid on the first course of concrete from $2\frac{1}{2}$ to 4 inches below the finished surface. They are then covered with a second course to bring the slab to grade. Bridge approach panels contain special reinforcing near the bottom of the slab.

The one procedure which is similar throughout all the jobs is the curing. All of the paving is cured for seven days by covering it with curing paper. Some contractors, of course, use only 12-foot widths of paper while others use 24-foot widths, but the general procedure is the same. A narrow strip of paper is first laid along each side of the new slab. The main sheet is then rolled out over these strips and weighted down with earth along the sides. The next day, when the forms are removed, the narrow sheets are pulled out enough so they can be folded down over the edges of the slab. They are then weighted down with earth. After the curing period, the paper is rolled up and re-used.

Central Plant Setup

Most of the contractors are using conventional paving equipment and procedures. In a typical operation, dry batches are proportioned in a batch plant and hauled to the grade in batch trucks. Two double-drum pavers mix the concrete and lay it on

(Continued on page 52)

CONTRACTORS AND ENGINEERS

rynn Huge Turnpike Job

Successive applications of bitumen and chips over granular material build up shoulders on new highway across Ohio

OHIO TURNPIKE specifications call for generous shoulders on both sides of each roadway. The same granular material used in the sub-grade for the paved roadway is placed to bring the shoulders up to within 3 inches of the top of the pavement. Coarse stone provides the top level, and a bituminous surface is then applied.

The top 3 inches of the shoulder consists of a course of No. 2 stone graded from 3 to 1½ inches, which is penetrated with bituminous material and choked with ½-inch chips in three successive applications of bitumen and chips. When C&E visited the turnpike this fall, a typical shouldering operation was being conducted on a section where the general contractor is V. H. Holderman & Sons, Inc., Columbus, Ohio. The shouldering was subcontracted to the

firm of Northwest-Shelly, Thornville, Ohio.

A Pettibone-Mulliken Speed Swing loader with 1-yard bucket loaded the No. 2 stone from a large stockpile to trucks which hauled to the roadway. The trucks dumped into a Blaw-Knox spreader traveling on the pavement. The transverse belt of the spreader carried the rock to the shoulder, where a spreader blade struck it off to a uniform layer. A Jackson vibratory compactor followed, compacting the coarse rock into a stable 3-inch course.

Asphalt Applications

At this point the shoulder had enough stability to support a heavily loaded distributor, but the rock was rather easily dislodged and lost its stability when the wheel of any vehicle began to spin on it. Asphalt

was then applied to the coarse rock with a Littleford distributor mounted on an R-190 International truck. This first application was made at the rate of 1.2 to 1.5 gallons per square yard.

The first course of ½-inch chips was then spread at the rate of 21 pounds per square yard, using a Galion chip spreader attached to the rear of a dump truck. This course was then rolled with a Galion tandem roller and broomed until all of the chips were embedded in the asphalt. The distributor then applied a second shot of asphalt at the rate of 0.7 to 1.0 gallons per square yard, and this was followed by an application of chips at a rate of 12 pounds per square yard. This was again broomed and rolled until the chips were incorporated into the shoulder. By this time there were relatively few voids

visible between the large stone particles.

A seal coat of 0.4 gallons of cutback asphalt and an application of another 17 pounds of chips per square yard completed the shoulder. The several applications resulted in a total of about 2.6 gallons of bitumen and 50 pounds of chips applied to each square yard of the 3-inch course of No. 2 stone.

Personnel

V. N. Holderman & Sons, Inc., hold the construction contracts for four construction sections which make up design section D-20. Contracting engineer for this design section is Consoer-Townsend & Associates, Chicago, Ill., whose project engineer is J. F. Barjenbruch. Managing the project for the contractor is Gail Holderman.

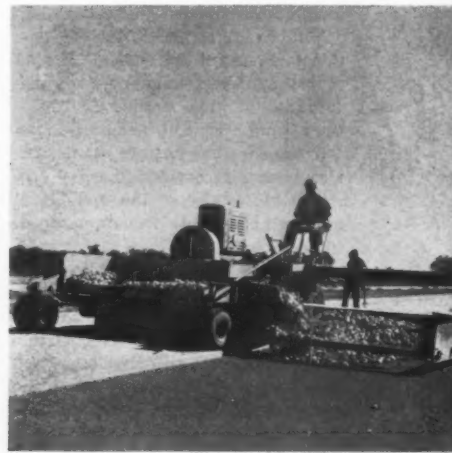
THE END



A Blaw-Knox spreader riding on the finished slab places a lift of granular base material for a shoulder on the Ohio Turnpike project.



No. 2 stone for the shoulders is loaded from the stockpile to a truck by a Pettibone-Mulliken Speed Swing loader with 1-yard bucket.



Here the Blaw-Knox spreader distributes the stone in a uniform 3-inch layer on the shoulder.



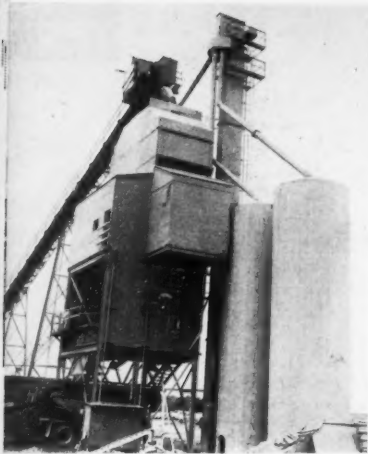
An initial penetration shot of hot asphaltic cement is applied to the compacted rock lift by a Littleford 2,100-gallon distributor on an International truck.



A Galion spreader attached to the rear of a dump truck applies the first course ½-inch chips at the rate of 12 pounds per square yard.



Chips are broomed, then rolled by this Galion roller until they work down into the asphalt.



Twin silos of the Johnson mixing plant hold 875 barrels of cement each. The 600-foot-long conveyor carries aggregate from stockpile to plant. A Dumpcrete loads under the plant hopper, which is fed by two Koehring mixers above it.

C&E Staff Photos

concrete for any reason, they can be used for other purposes, such as delivering small amounts of sand to pipe layers and masons. They are also quickly and easily cleaned.

Concrete Mixing Plant

The backbone of Winkelman's paving setup is a Johnson concrete plant which has a capacity of 130 cubic yards per hour based on a

mixing cycle of 1¼ minutes per batch. Cement is delivered to the plant by truck from the plant of the Medusa Portland Cement Co. at Wampum, and Bessemer Limestone & Cement Co., Bessemer, Pa., less than 20 miles away. Two storage silos hold 875 barrels each. The hopper in the plant holds an additional 150 barrels for a total storage of 1,900 barrels.

Crushed blast furnace slag in two sizes, from 2 inches down and from one inch down, is the coarse aggregate. This material is furnished by Standard Slag & Stone Co. and U. S. Steel Slag Sales, both of Youngstown, Ohio, and is hauled about 11 miles to the plant in dump trucks. Fine ag-

gregate is a screened and washed natural sand. As the aggregates are delivered to the plant, they are stockpiled over a recovery tunnel by a Northwest dragline using a 3-yard Esco bucket. With this big drag bucket, the crane operator is able to keep the area cleaned up and leveled up for the trucks delivering the aggregates. A dozer segregates and crushes the aggregate.

Inside the 8-foot tunnel, a 24-inch conveyor belt carries the aggregates out to an inclined conveyor which rises 65 feet to the distributor above the aggregate bins of the plant. Gates in the tunnel under the stockpile are operated electrically, as is the dis-

(Continued from page 50)

the grade, where it is spread by one or more spreaders and finished with finishing machines and longitudinal floats. Hand finishing along the edges and across the transverse contraction joints, as well as a burlap drag, complete the operation. There are many variations of this procedure. One of the most interesting of these occurs on two sections where D. W. Winkelman Co., Inc., Syracuse, N. Y., has eliminated the pavers and substituted a central mixing plant.

Instead of dry batching via batch trucks to pavers, Winkelman delivers the concrete from a Johnson mixing plant to the grade in Dumpcretes. Two Koehring 56-S mixers in the central plant discharge into a common hopper from which the 4-yard Dumpcretes are loaded. The Dumpcretes discharge the mix on the grade in front of a spreader, and succeeding operations are similar to the conventional paving train. George Cecil, project manager, summarizes the advantages of this method in these three words: control, flexibility, and convenience. Presumably there are also economic considerations.

The uniformity of the mix being produced bears out the claim of good control. Air content is maintained very close to the 5 per cent figure and slumps are held to 2 to 2½ inches. These two factors indicate a concrete mix which does not segregate in the Dumpcretes, even with hauls as long as 5 miles, and which flows out of the trucks and down the chutes without separation. Test cylinders give 28-day strengths uniformly around 4,800 to 4,900 psi. This uniformity of mix is accomplished with crushed-slag aggregates which are extremely sensitive to slight variations in moisture.

The flexibility of the setup is indicated by the fact that Winkelman produces and transports the concrete for structures in the same equipment used for paving. It is very simple to pour in several places at the same time. This feature is especially useful when placing small sections of paving such as bridge approach panels, interchanges, and sections left out for temporary crossings. When paving operations are running at full speed, they tax the full capacity of the equipment, and at such times concrete for structures is secured from nearby ready-mix plants.

The convenience of the setup is really a measure of the flexibility of the equipment. Large or small pours can be made at any point on the 10-mile job without moving equipment. When the Dumpcretes are not hauling



Portable plant proves best for Turnpike job

HIGHLAND AGGREGATES MOVES PLANT ALONG 100-YEAR-OLD WASTE PILES TO PRODUCE BASE COURSE

Turnpike...TURNPIKE...TURNPIKE. In some areas that's about all you hear discussed among construction men these days and it's a good thing too, because goodness knows, our whole highway system has been lagging long enough.

Modern plant in old quarry

One of the exciting examples of modern highway construction is the Ohio Turnpike, and up near South Amherst, in Ohio, you'll find an interesting operation in progress. There, at an old, old quarry, you'll find a modern, up-to-date crushing

plant producing base material from 100-year-old refuse piles of cut stone waste.

Now processing base material isn't exactly news in itself. But construction men are interested in why a portable Two-Unit plant was placed on this job.

Old piles hold usable material

It all started when the Highland Aggregates Company discovered that these huge piles of waste rock, owned by Cleveland Quarries, were suitable for use on the Turnpike. But this rock, having been dumped in a

long row by railroad cars, posed a problem as to selection of the right kind of crushing plant.

J.W. Gutermuth and A.J. Hoffman, executives of Highland Aggregates Company, referred the problem to their equipment distributor, the Williams Tractor Company, who in turn, called in a PIONEER expert. A survey of the material and sites showed two alternatives: (1) a stationary set-up, using trucks for all hauling or (2) a portable rig, to eliminate trucks for hauling the feed.

A "natural" for a portable plant The economics involved showed that this was a "natural" for a Two-Unit portable plant, even to placing the

CONTRACTORS AND ENGINEERS

tributor. The operator can draw aggregates from either of the three stockpiles and deliver them to the proper bins simply by operating the push-button controls. The 3-compartment aggregate bins each hold 50 tons of material.

To supply water for the mixing and other operations around the plant, there are two 8-inch wells 275 feet deep at the site. Deming deep-well turbine pumps raise the water from the wells. At times of heavy usage, the supply from the wells is insufficient and must be augmented by water hauled in tank trucks.

Aggregates, cement, and water are weighed in 2-yard batches to two

Koehring 56-S mixers, which discharge into a common 6-yard hopper. The fleet of 14 four-yard Dumpcetes on Ford F-8 trucks take their loads from the hopper. The entire plant is electrically operated, the electrical power being supplied by a 175-kw generator powered by twin GM diesel engines. In one instance, this setup provided the concrete for a mile of 12-foot lane which was poured in 18 hours. The same plant and haul units produced and delivered the concrete for 14 bridges which this contractor built between November, 1953, and September, 1954.

These two construction sections are included in the so-called "expedited



On a stretch of turnpike where the entire 24-foot roadway was poured at once, the center joint is cut with a Con-Saw self-propelled saw. A second workman cleans the joint with an air jet. Air is supplied by the LeRoi 315 compressor.



step-down transformers for the electric power in a portable house. Thus it remained only to determine from the size of feed, the gradation of the product, and the output desired—the proper size of plant.

In the PIONEER plant selected, the primary consists of a 3042 jaw crusher and a 42" x 14" apron feeder. The secondary includes a 54" x 24" twin roll crusher and a split feed type 4' x 12' 3½ deck vibrating screen.

Split feed yields extra output

Normally, in an installation of this kind, one might expect to find a bottleneck in screening capacity. However, in the split feed screen, found only in PIONEER plants, decks are so arranged that half the product from the crushers is fed to the top deck and half to the bottom deck. Oversize from both decks feeds to

the twin roll for secondary reduction. Material passing top and bottom decks is collected in the hopper under the screen for delivery to trucks.

Offers twice normal screening area
This arrangement of the screens actually provides twice the normal screening area of a 4' x 12' screen, or 96 square feet—and makes possible a production figure in this case as high as 400 tons an hour, and an easy average of 300 tons.

PIONEER Two-Unit Plants for both rock and gravel combine the advantage of large units with that of easy portability, and provide a flexibility in operation which is not possible in any other type plant. For example, the secondary can be used separately from the primary to permit crushing from surge piles, or each plant can be used independently on a

different job.

Available, too, is the exclusive PIONEER triple roll secondary, which allows the feeding of larger rock to the rolls. This increases production because the jaw crusher in the primary can be operated at a larger setting.

For full particulars on the application of the Two-Unit Plant to your operations, write to Pioneer Engineering Works, Inc., Minneapolis 13, Minnesota (subsidiary of Poor & Company, Chicago) or see your nearest authorized PIONEER Distributor.

Pioneer
Continufluo EQUIPMENT

segment" which will be known as the East Gate Section. This portion of the turnpike, extending west 21.4 miles from the Pennsylvania line to State Highway 18 west of Youngstown, was scheduled to be opened to traffic the first of this month. This contract was awarded July 22, 1953, giving the contractor just about a year and 4 months to get the section ready for traffic.

Some idea of the amount of work included in these sections can be obtained from a glance at some of the contract quantities. Earthwork included 3,200,000 cubic yards of excavation and 365,000 cubic yards of borrow. Subbase including shoulders required 118,000 cubic yards of compacted granular material. Under this contract there are 296,000 square yards of 10-inch reinforced-concrete pavement on the turnpike and 10,820 square yards of 9-inch concrete pavement in approaches. Bituminous shoulders measure 216,000 square yards. Structures under this contract include 14 bridges, five box culverts, and numerous drainage structures. Contract price for the 10.1 miles of roadway construction is \$8,973,237.

Places 12-Foot Lanes

Winkelman is one of several contractors who chose to place the paving in 12-foot lanes. Among the advantages claimed for this method, as compared to placing the entire 24-foot roadway in a single operation, is the fact that there is more room for trucks and other equipment to operate on the roadway. Since the paving section has a V-crown, it is also much more simple to make the transition to and from super-elevated sections on curves. Other advantages claimed are: less weight on the forms, shorter bridges for finishers; shorter reach for finishers and thus shorter handles on finishing tools; and the availability of the first lane as a haul road while pouring the second.

One of the disadvantages of the system is the fact that more forms are required because the paving train moves faster. Three forms must be set instead of the two required for the wide section. On the whole turnpike job there are nine contractors paving 24-foot widths and five paving 12-foot widths.

On the finished grading section, the contractor lays a 6-inch compacted course of granular subbase. On these two sections, the material is a pit-run gravel put through a Universal jaw crusher to reduce the larger rock to 3-inch maximum size. In the pit, the material is excavated by a Lorain 820-J 2-yard shovel and deposited in a hopper which feeds the crusher. A conveyor belt carries

the crushed material to trucks which haul to the job. On some of the other contracts, granulated slag is used for subgrade while various types of pit-run material are used on others.

Jersey spreaders attached to D7 Caterpillar tractors spread a uniform course of the crushed gravel on the grade as it is delivered. This course is then compacted by an International Vibro-Tamper. Two passes are ordinarily sufficient to compact the 6-inch course.

Concrete Forms

The 10-inch Heltzel and Blaw-Knox forms are then set to line and grade on the compacted base. Form stakes are driven by two Thor pin drivers powered by an Ingersoll-Rand 105 Gyro-Flo compressor. Winkelman has 16,000 linear feet of forms on the road. A Buckeye FG13 Finegrader rides the forms and cuts the base to

proper grade. Immediately behind the Finegrader, the base is watered and then compacted by a Jackson vibratory compactor which leaves the surface smooth and hard.

Dumpcretes place the concrete ahead of a Jaeger spreader which levels the first course of concrete at a depth of about 7½ inches. This spreader is equipped with three Maginniss Hi-lectric vibrators, two mounted on the spreader near the side forms and one portable head used for vibrating the concrete adjacent to the load-transfer assemblies for the transverse joints. Workmen then lay in the mats of reinforcing steel on the first course, and the Dumpcretes place the concrete for the second course. This is struck off by a second Jaeger spreader equipped with an oscillating screed.

Finishing is accomplished with a

Heltzel Flex-Plane finishing machine and a Koehring longitudinal float, followed by hand floating and edging. Final finish is applied by a bur-lap drag. Transverse contraction joints are spaced at 61.5 feet and are tied together with Bethlehem load-transfer assemblies. Keyway formers for the center joint are attached to the center form with wires. Half-length center tie bars are threaded into the keyway former, projecting into the slab. When this form is removed, the other half of the center tie bar is threaded into the unit which was cast into the first slab.

After the curing paper has been removed, joints are carefully cleaned and filled with joint-sealing compound. Winkelman sublet this part of the work to Pavement Controls, Inc., Cleveland, Ohio. This firm also sealed joints on other sections of the turnpike. On this section, the contractor used a pump carried on a trailer pulled by a Le Roi Tractair. The Tractair provided air for blowing dirt out of the joints as well as for operating the pump. Three of four barrels of joint compound were carried along on the trailer. The compound used was Phillips 77, a rubber-asphalt cold joint compound produced under arrangements with Prestite Engineering Corp. On sections where the full 24-foot width was placed at once, the center joint was sawed and filled with sealing compound after the curing paper was removed.

Mobile Radio

Most contractors on the turnpike operate several spreads simultaneously on construction sections from 4 to 12 miles long. Practically every contractor is utilizing mobile radio as a means of keeping in constant touch with all of the operations. Winkelman's setup is fairly representative in this respect. Seven mobile units are located in vehicles driven by the project manager, superintendents, and foremen, and one unit is located on one of the Jaeger spreaders in the paving train. The main base station is set up in the

trailer office which is project headquarters. Other fixed units are located at the batch plant and the repair shop. Both Motorola and General



George Cecil, project manager for D. W. Winkelman Co., Inc., on an Ohio Turnpike paving job, keeps in touch with his crews by Motorola two-way radio.

C&E Staff Photo

Electric units are used in this setup.

A unique and valuable feature of this arrangement is the direct communication between the paving crew, where the Dumpcretes are unloading, and the mixing plant. Any slight variations in the mix can be reported to the plant immediately. An added feature of Winkelman's radio setup is a telephone hand set mounted on the wall beside the project manager's desk in the office trailer and connected with the main base station. The project manager can thus talk with all of the other stations and mobile units without leaving his desk.

Personnel

The construction sections built by Winkelman are included in the design section for which Richardson, Morehouse, Ramsey & Fisher, Pittsburgh, Pa., is the consulting engineer. W. A. Bryan is project engineer for this section. George Cecil is project manager for Winkelman, and William Delaney, Jr., is paving superintendent. John Martin is engineer for the contractor.

THE END

The fourth article on the Ohio Turnpike begins on page 56.



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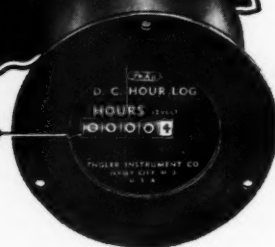


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The new Blackhawk Utility Blade, made by Arps Corp., New Holstein, Wis.

Tractor-Mounted Blade Features Adjustability

■ A rear-mounted blade for 2, 3, and 4-plow tractors equipped with a three-point-hitch system is announced by Arps Corp., New Holstein, Wis. The Blackhawk Utility blade, weighing about 448 pounds, adjusts to many positions. It offers a choice of nine angular positions for forward travel, three angular positions for reverse travel, five tilt adjustments (maximum 35 degrees), eight blade-pitch adjustments, and quick offset facilities. No wrenches are needed to make any adjustments.

Accessories include a ditching point for deep penetration, side plates and skid shoes for snow removal, and a gage-wheel attachment for providing a smooth finish when ditching, grading, and leveling. The blade is useful for terracing, landscaping, ditching, grading, backfilling, land leveling, road building and maintenance, and snow removal.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 803.

Details on Vacuum Process for Pre-Casting Concrete

■ The Vacuum Concrete process for producing precast floor slabs, beams, columns, roof slabs, bridge decks, and many other precast elements is described in literature available on request from Vacuum Concrete, Inc., 4210 Sansom St., Philadelphia 4, Pa. The company supplies equipment and technical advice on a rental basis.

The heart of the process is the creation of a vacuum around formed concrete to compress the mass and lead

off excess moisture. The concrete sets relatively quickly, after which the slab is lifted from the form by the Vacuum Concrete lifter without point stresses. Features emphasized in the literature are production speed, strength and surface characteristics of the elements produced, and the economy of the system.

To obtain this literature write to the company or use the Request Card at page 18. Circle No. 732.

Hard-Facings Compared

■ A comprehensive comparison chart on hard-facing rods and electrodes has just been published by the Mir-O-Col Alloy Co., Inc., 312 N. Avenue 21, Los Angeles 31, Calif. The chart lists the various rods and electrodes produced by twenty-nine different manufacturers. It is set up to provide the reader with a quick and easy review of any one particular type of hard-facing rod or electrode.

Abrasion and impact qualities of each type of rod, as well as many of its applications, are also listed. Still another feature of the chart is its listing of individual hardness ratings,

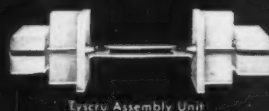
whether as deposited, work-hardened, or heat-treated.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 804.

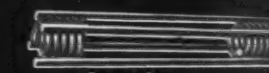
Dewey & Almy Merger

Stockholders of Dewey & Almy Chemical Co., Cambridge, Mass., have voted to merge the company with W. R. Grace & Co., international trading firm of New York, N. Y. The merger of Grace and the manufacturer of concrete admixtures and protective coatings for masonry became effective last month.

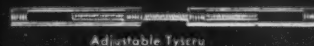
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All Richmond Tyscrus are subjected to rigorous tests* to determine their safe working load and ultimate strength. These ratings are listed in our catalogue. Complete test reports are available on request.

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1/2" Dia.	6,000	9,490 lbs.	18,590 lbs.
3/4" Dia. (12M)**	12,000	19,720 lbs.	20,570 lbs.
1" Dia. 2 Strut	18,000	27,580 lbs.	27,820 lbs.
1" Dia. 4 Strut	24,000	37,930 lbs.	36,890 lbs.
1 1/4" Dia. 4 Strut	30,000	55,270 lbs.	56,790 lbs.

*Conducted at Brooklyn Polytechnic Institute by Charles E. Schaffner, Asst. Professor of Civil Engineering.

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The No. 1410 Floor-type Salamander is attached by hose to the cylinder, no pressure regulators required for either model. Insto-Hot Salamanders have engineered heat deflection (patents pending) with capacities up to 150,000 Btu per hour.

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A lubrication crew for R. B. Potashnick, Cape Girardeau, Mo., uses the Lincoln system to add motor oil to the engine of a Caterpillar D8 pusher. Oil and grease are dispensed through hose reels in the side of the truck.

C&E Staff Photos

Maintenance Men on Pike

TO THE OHIO Turnpike Authority, the paring of the pike's construction schedule means that the road will soon be producing revenue, earning its own way, and paying off its bond issue. To contractors on the pike, this stepped-up construction means that their several spreads of equipment, usually operating more than one shift, must be maintained in as perfect an operating condition as possible.

Under these circumstances, equipment maintenance assumes a greater importance than ever. Not only must downtime be eliminated as far as possible, but all equipment in each spread must be kept operating at top efficiency. A sluggish push tractor may upset the smooth operation of an entire fleet of scrapers. The breakdown of a single haul unit may mean delays to a big loader. And the breakdown of a loader—even for a few hours—may delay a long series of operations. On the Ohio Turnpike, contractors are doing all they can to keep equipment operating smoothly.

A procedure that is practically universal is the lubricating of each piece of equipment once each shift. This is usually done by specialized lubrication crews using modern power equipment. Standard equipment on lube trucks includes a gasoline-powered air compressor; a small light plant for night illumination; and pumps, reels, and hoses for dispensing various lubricants. Greases and oils are dispensed directly from the barrels carried on the truck to the fitting on the machine being lubricated. Lincoln, Alemite, Graco, and Aro lubricating equipment are among the types commonly used.

Shops Are Important

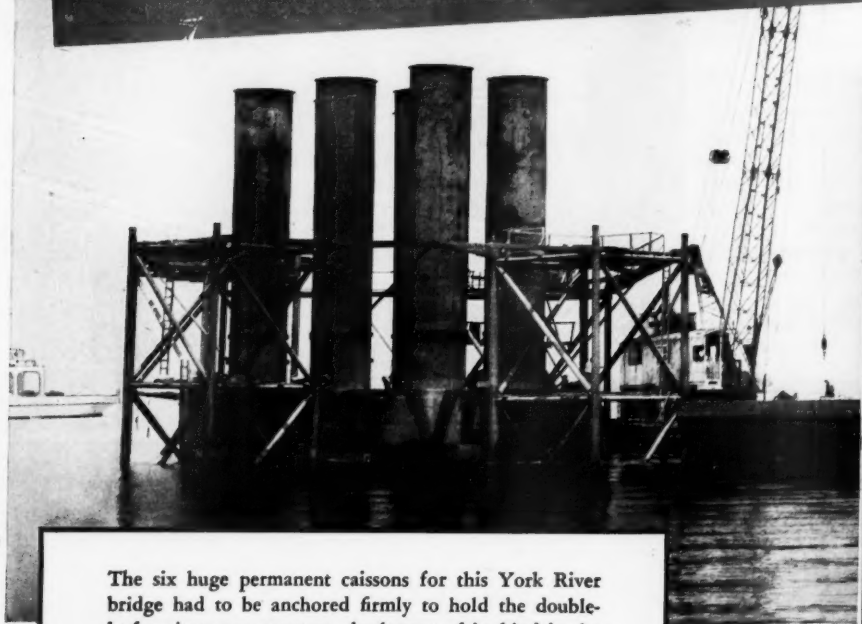
Most of the contractors also have job shops for the overhaul of equipment and for repairs which cannot be readily made in the field. Many of these are metal buildings which can be readily knocked down and moved to another job. They are usually equipped with oxyacetylene and electric welding equipment, presses for placing and removing bearings, and whatever large special tools are required for equipment servicing. In these shops, repairs can be carried on in inclement weather, and equipment can be overhauled during winter shut-down.

Typical of the many well conducted maintenance setups along the turnpike is that of R. B. Potashnick, Cape Girardeau, Mo., a general contractor for two sections. Included in this contractor's equipment fleet are 23 Caterpillar D7 and D8 tractors, five Cat No. 12 motor graders, eight Caterpillar DW21 scrapers, five LeTourneau scrapers, three Northwest shovels, a Euclid loader, 18 bottom-dump Euclids, and about 50 miscellaneous units including trucks, tractors, and light plants. With this fleet, the contractor is building 9.5 miles of the highway. The contract price of \$7,522,678 also includes work in a 60-foot-deep rock cut.

Lubrication of this entire layout is handled by two lube trucks. One is a homemade van body mounted on a

This McKiernan-Terry Pile Hammer
drove spud pipes in these dock towers

60 FEET INTO THE RIVERBED



The six huge permanent caissons for this York River bridge had to be anchored firmly to hold the double-leaf, swing-span structure, the largest of its kind in the world. That's why the contractors turned to a powerful McKiernan-Terry Double-Acting 10-B-3 Pile Hammer to drive the anchor tower spud pipes into the riverbed.

At each corner of the pipe anchor towers was a 14-in. OD pipe. Inside these pipes, 12 1/4-in. OD spud pile pipes from 140 to 150 feet long were driven 60 feet below the river bottom by the McKiernan-Terry Hammer. Piles for steel sheet cofferdams were also punched down quickly by a McKiernan-Terry No. 7 Double-Acting Hammer.

On scores of bridges throughout the country—and many other types of construction jobs—McKiernan-Terry equipment is playing a vital role. No wonder contractors rely on the power and dependability of McKiernan-Terry hammers and extractors. Wide range line includes 16 sizes of hammers and 2 sizes of extractors. Write for bulletin.

McKiernan-Terry 10-B-3 Pile Hammer which helped to build the substructure for the new bridge at Yorktown, Va. Massman Construction Co. and Kansas City Bridge Co. were the contractors.

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Plants: Harrison, N. J. and Dover, N. J.

MK 315

Pike Equipment Rolling

Chevrolet truck. The other is mounted on a 6x6 GMC army surplus truck, which is especially useful for reaching equipment working off the road. Both trucks carry Curtis air compressors and Kohler light plants, and are equipped with Lincoln lubricating equipment. Each rig has five hose reels which dispense track lube, transmission lube, chassis lube, engine oil, and air directly from the bulk containers on the truck. Danger of dirt or other contamination in lubricants is reduced to a minimum.

Two workmen comprise a truck's crew. These crews lubricate each piece of equipment during a shift and clean air filters with each lubrication. Scrapers, "Eucs", dozers, and other machines are stopped one at a time and lubricated during regular working hours. Machines like the Euclid loader and its tractors are lubricated during lunch periods, and before or after regular working hours. Engine oil is changed regularly, depending on the number of hours the unit has worked and the working conditions. Equipment operators are charged with checking their own water supply. Barrels of water are located around the job at convenient points, and these are kept filled by the crews of the water trucks which supply water to the grade.

Keeps Careful Records

Equipment Superintendent Farris Herman feels that keeping complete records of all maintenance operations is essential. Each greaser completes and turns in a daily form for each piece of equipment lubricated. This is a simple printed form requiring only a few check marks in appropriate spaces, but it gives the grease foreman the information he needs for his daily report. Reports are carefully studied, and any indication of trouble—such as excessive oil consumption, poor lube fittings, or oil leaks,—are immediately investigated by a mechanic.

Individual records list downtime and minor repairs for each piece of equipment. A study of these records indicates when something is going wrong, and when the machine is nearing the overhaul stage. Major overhaul records are kept in a separate book. Here Herman records what was done, such as replacing pistons or grind crankshaft, and such facts as the amount of oversize of the pistons, undersize of crankshafts, and other information which will be of value the next time the machine requires repair.

Well stocked parts trailers carry practically all items usually required for routine maintenance. To keep track of this large and costly supply of parts, Herman uses a continuous inventory on a card system. Each part is listed on a separate card, which carries such information as the part number and description, the trailer and bin in which it is stored, the number of parts purchased and date received, withdrawals from stock, and number of parts currently on hand. During the winter when work

(Continued on next page)

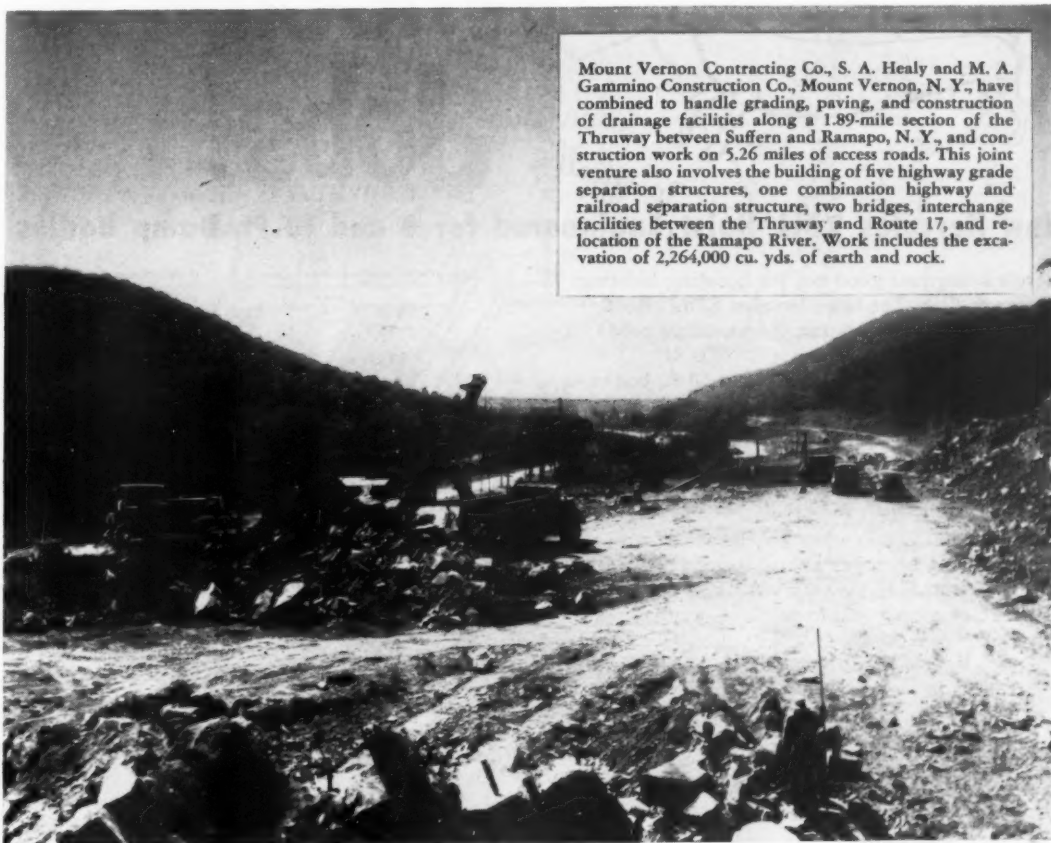
One turnpike contractor has a crew service a Caterpillar DW21 during the afternoon shift. The truck carries Aro lubricating equipment and six reels for chassis lubricants, track grease, transmission grease, engine oil and air.



GULF PRODUCTS and FINE SERVICE

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on New York State Thruway



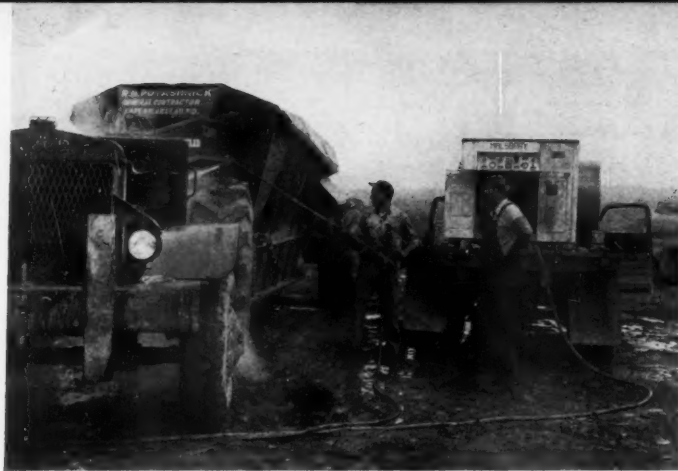
Mount Vernon Contracting Co., S. A. Healy and M. A. Gammino Construction Co., Mount Vernon, N. Y., have combined to handle grading, paving, and construction of drainage facilities along a 1.89-mile section of the Thruway between Suffern and Ramapo, N. Y., and construction work on 5.26 miles of access roads. This joint venture also involves the building of five highway grade separation structures, one combination highway and railroad separation structure, two bridges, interchange facilities between the Thruway and Route 17, and relocation of the Ramapo River. Work includes the excavation of 2,264,000 cu. yds. of earth and rock.

THE New York Thruway is another tremendous and important project where Gulf tops the list of suppliers of petroleum products. Twenty leading contractors on the Thruway, with a total of 43 jobs, rely on Gulf to help keep equipment delivering top performance.

Mount Vernon Contracting Co., S. A. Healy and M. A. Gammino Construction Co., for example, know from experience that Gulf quality lubricants provide better protection against mechanical delays. And that Gulf fuels help them gain an extra margin of engine power and efficiency. Then too, they appreciate the helpful engineering counsel that Gulf provides, as well as Gulf's prompt delivery service.

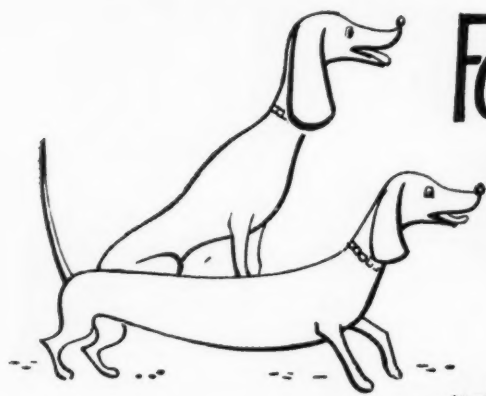
Let us discuss with you how Gulf products and service can help you on your next job. They are available to you through more than 1400 conveniently located warehouses. Gulf Oil Corporation • Gulf Refining Company, 1822 Gulf Building, Pittsburgh 30, Pennsylvania.





This bottom-dump Euclid, just off a muddy job, is steam cleaned by a Malsbary unit before being taken to the shop for repairs. The steam cleaner and a 500-gallon water tank are mounted on the flat-bed Chevrolet truck.

C&E Staff Photo



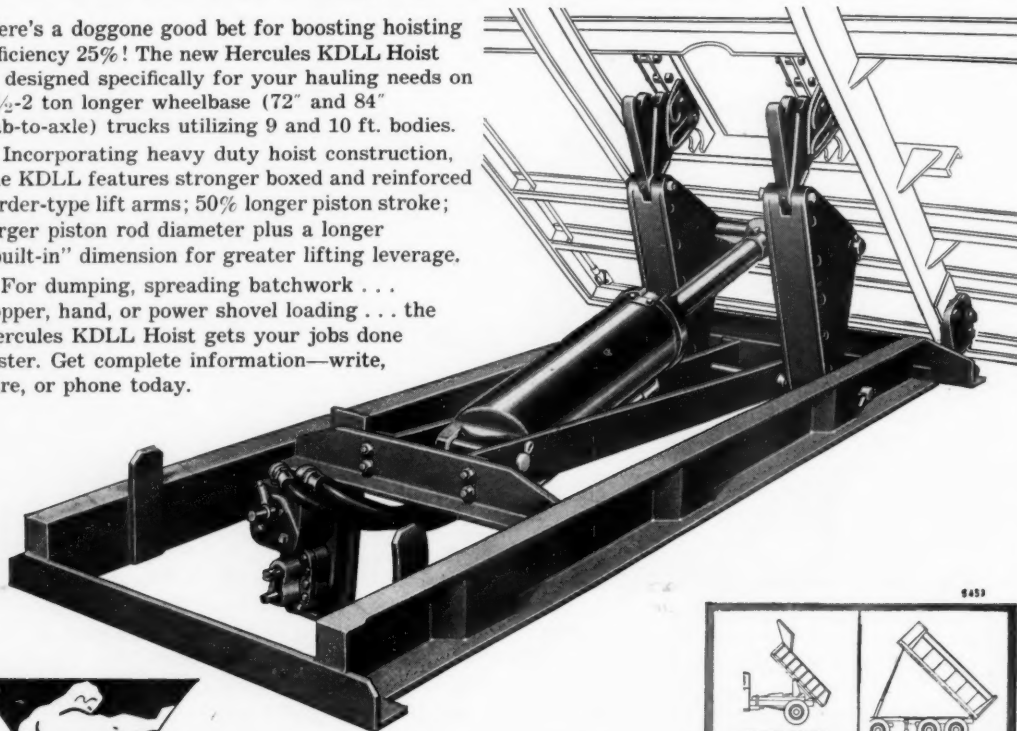
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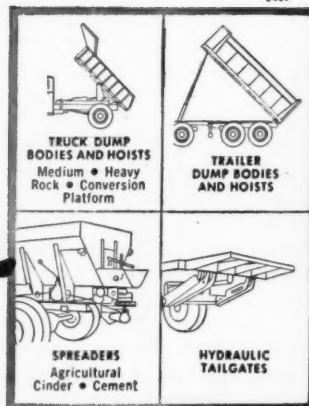
(Continued from preceding page)
is shut down, this inventory is verified by actual count of all parts in the bins. This card file is a valuable aid to the equipment superintendent.

Repair Trucks Have Radio

With more than 100 pieces of equipment in the field at the peak of construction, Potashnick's service crew consists of as many as 16 mechanics and helpers. To get around to equipment on the job, these men use four GMC pickups equipped with Powers mechanic's tool-box bodies. Each pickup has a Wagner compressor operated from the truck engine, and an air tank. One carries a 200-amp Lincoln arc welder, and the others usually carry a set of tanks and equipment for oxyacetylene welding. In addition to the necessary tools and equipment to make field repairs, the operator carries a mobile radio set so that he can keep in touch with the shop and other crews.

Mobile radio systems play an important part in the maintenance program of many turnpike contractors, but on this section its use is especially impressive. The 60-watt Motorola base station in the job office has remote-control units in the repair shop and batch plant. At the shop, the receiver is connected to a large speaker mounted outside the equipment superintendent's office. From here, it can be heard by men working on machines in the shop or around the yard. Eighteen Motorola mobile units in cars and trucks of superintendents and foremen make it possible to report equipment trouble directly to the equipment superintendent or to the mechanics.

Immediate attention to even the small maintenance details is convenient under this setup, and it is this type of attention which keeps all equipment functioning at peak efficiency. The combination of well



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Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdy constructed instruments that will automatically show the operator the exact grade of slope on which he is working.

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THE SLOPE-METER CO. EXCELSIOR, MINN.
CONTRACTORS AND ENGINEERS

A mechanic works on a Euclid tractor in the shop. The GMC pickup, equipped with a Powers mobile radio which keeps the crew in touch with the shop and other crews.

C&E Staff Photo

equipped service trucks manned by competent workmen, the radio communication system, and an ample and well kept supply of parts are the keys to this preventive maintenance program.

When equipment needs major repair or is ready for overhauling, it is brought to the job shop. This is an Armco Steelex building, 40 feet wide and 120 feet long, with an 8-inch concrete-slab floor. Ample doors at both ends permit easy entry, exit, or through travel. The well lighted shop is complete with welding equipment, air compressor, air and electric wrenches, presses, and other equipment.

Steam Cleaning

Before a machine is brought into the shop for repairs, a Malsbary steam cleaner removes all grease and dirt. The steamer and a 500-gallon water tank, both mounted on the bed of a Chevrolet truck, are available for cleaning machines in the field which cannot be brought into the shop. This equipment allows mechanics to go right to work on a clean machine. And since the shop stays clean, there is less danger of dirt getting into vital parts when they are being reassembled.

Keeping the fleet supplied with fuel is also a job for the equipment superintendent. On this job, diesel fuel is delivered in truck transports to a 20,000-gallon storage tank. It is dispensed to the equipment by two tank trucks, a Dodge with a 1,500-gallon tank and a Ford carrying a 2,000-gallon tank. These haul as much as 5,000 gallons of fuel per day. Both rigs are equipped with fuel pumps operated from the power take-off. One man operates each truck, fueling what equipment he can during regular working hours. The remainder is fueled when work is shut down. Gasoline-burning equipment is served from a filling station in the shop area. Sohio fuels and lubricants are used exclusively on this job.

Personnel

General supervision on this contract is shared by George Shelton, who looks after structures and paving, and Irving Garms, general superintendent of grading. Grading superintendent is William H. Jordan, and equipment superintendent is Farris Herman.

THE END

Another Ohio Turnpike article appears on the following page.



In this 40 x 120-foot Armco Steelex building, Potashnick has equipment for more than normal field repairs. In the background, a crew member works on a Caterpillar tractor, while a Westinghouse-LeTourneau roller waits for new shoes.

C&E Staff Photo

Line of 4-Cycle Engines In Wide Horsepower Range

The Kohler line of four-cycle air-cooled engines is covered in a new folder available on request. The literature describes four models, including single and two-cylinder units. The horsepower range of the line runs from a minimum of 1.8 at 1,800 rpm for the 41-pound Model K 90 to a maximum of 26.8 hp at 3,600 rpm for the two-cylinder K 660.

Typical applications listed in the folder include the use of these engines to operate pumps, sprayers, snow removal equipment, portable saws, small concrete mixers, hoists, compressors, and lift trucks.

To obtain this literature write to the Kohler Co., Kohler, Wis., or use the Request Card at page 18. Circle No. 768.



weight lifters aren't always available

KEEP YOUR PRODUCT

Lightweight!

Power Products new industrial engine offers

60% less engine weight

42% less engine size

NOW you can give your power equipment the Lightweight being demanded by all of industry. Power Products engines are not just a little lighter—they're 60% lighter than any currently available industrial engine of comparable horsepower . . . and that means greater portability for equipment. Wheels, carriages, etc., formerly necessary for portability, can be eliminated in many cases, allowing further streamlining and extra weight and cost savings. Power Products engines are more compact in design — easy starting — offer sustained performance at high speeds and are easier to service than any other industrial engines. Yet they actually cost less!

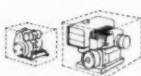
If you want better acceptance — better performance for any industrial product that requires from 2 to 4 horsepower . . . switch to Power Products Lightweight!



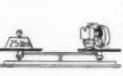
LOOK AT THESE FEATURES



Lightweight — A standard 3½ H. P. industrial engine weighs as much as two and one half Power Products industrial engines of 3½ H. P.



Compact — A unique design makes this engine amazingly compact. A comparison of overall dimensions shows a saving of 72% in size over the standard engine.



LOOK AT THE RESULTS — "Pump and motor weigh only 25 lbs.," reports a leading pump manufacturer. This is typical of the kind of amazing lightweight products these engines make possible. "Only 41 lbs., and usable anywhere, at any angle." Grain auger manufacturers are among the many who have found it possible to revolutionize their products with these engines.

POWER PRODUCTS CORPORATION

Grafton, Wisconsin

Gentlemen: I know what important advantages weight saving can give my products. Please send me full information on these new engines.

Name.....

Company.....

Address..... State.....



KIESLER
SINCE 1892
2-LEVER ARM
CLAM SHELL
BUCKETS
with
POWER
ON BOTH SHELLS
"A PAYLOAD EVERY TRIP"
The ONLY Bucket that DIGS-IN
instead of Lifting-Out.
Write for Literature.
JOS. F. KIESLER COMPANY
934 W. HURON ST. CHICAGO 22, ILL.



Steel for the floor system of the only arch bridge on the road is set by a Manitowoc crane. The span crosses the deepest rock cut on the turnpike, and its deck is 80 feet above the roadway.

C&E Staff Photos

Pike Contractors Simplify Forming For Bridge Decks

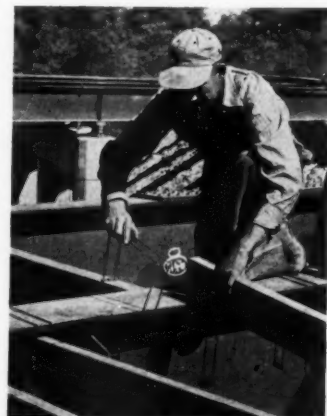
NOTHING SEEMS to please a bridge engineer more than to turn out a plan for a bridge which is bigger, longer, higher, lower, smaller, lighter, heavier, or in some other way different from any previously built. Bridge builders, too, delight in their own gadgets and methods for such operations as building forms, supporting screeds, eliminating false-work, and finishing concrete.

Expressway construction, however, has started a trend in the opposite direction. For example, 282 structures which carry intersecting highways under or over the Ohio Turnpike have practically identical deck cross sections. Although there are many variations of skew, span, design load, and other factors, the bridges will look very much alike to the turnpike traveler.

In spite of the uniformity of design, there are almost as many ways of forming the decks as there are contractors building the bridges. And while many methods of forming are similar, practically every contractor has a different gadget or way of doing things which he prefers over all others.

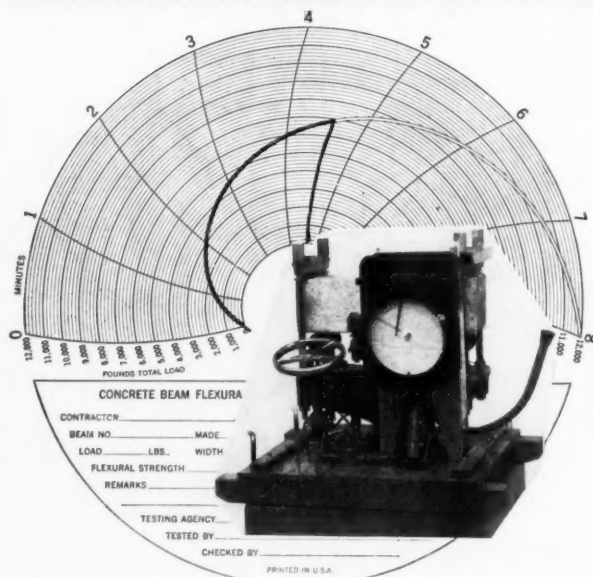
The typical structure carrying an intersecting road over the turnpike is a four-span bridge. One pier is located in the center of the median and the others just outside the outer shoulders. Abutments are set up on the approach fills, and the fills are sloped from the abutment to ditch grade at the first pier to give an open appearance. Steel girders span between the piers and support the concrete deck. Some of the piers rest on spread footings; others are on piling. Variations in span lengths and cor-

A workman for Beaumont Bridge Corp. slips a Sure-Grip hanger over a beam to support form joists from the top flange of a steel girder.



CONTRACTORS AND ENGINEERS

BEAM BREAKERS used on the OHIO TURNPIKE



PORTABLE RECORDING BEAM BREAKERS NO. 415-UL CHOSEN FOR CONCRETE BEAM FLEXURAL STRENGTH TESTS TO ASSURE THESE AND OTHER ADVANTAGES:

IRREFUTABLE CHART RECORD OF ENTIRE TEST, including very important rate of loading. LOWER COSTS; even unskilled person performs entire test in less than 10 minutes.

PERFORMS BOTH CENTER POINT TESTS AND THIRD POINT TESTS (A.S.T.M. C-78; A.A.S.H.O. T-97).

UNIFORM AND SHOCKLESS HYDRAULIC LOADINGS AT PROPER RATE, by easy rotation of pump hand-wheel for pen to record within guide-track.

FIELD USE QUALIFICATIONS; weather and corrosion resistant construction; self contains 22" x 30" x 27"; shipping weight approx. 250 lbs.

Request new catalog of time-proved concrete, soils and other physical testing equipment.

RAINHART CO. 600-608 Williams St., P. O. Box 4065, Austin 51, Texas

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- **HEAVY DUTY HEX-LOCK**
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With forms hung from beams on Richmond form hangers, this bridge deck is ready for reinforcing steel. The curved section at left is formed with wood studs cut to fit the section.



An American crane with 3/4-yard Gar-Bro bucket pours a parapet wall on a bridge carrying one of the intersecting roads over the turnpike. On this section, paving is completed and the shoulder subgrade is ready for surfacing.

responding structural details allow for the many conditions of skew, curvature, and grade.

Driving the piles, whether they were steel H-piles, Raymond concrete piles, or Monotube shells filled with concrete, is a more or less standardized procedure. Building the concrete piers and abutments did not allow for any appreciable amount of originality, nor did the setting of the steel girders. But when it comes to building the deck forms, standardization is nowhere in evidence.

Building Deck Forms

A few contractors are standing by the old method of blocking up from the lower flange of the girder with a short stud supporting each form joist. Others use Richmond, Superior, Sure-Grip, and probably other brands of form hangers resting across the top flange of the girders and supporting the form joists. Some of these hangers, like the Richmond hanger Frame-Ty, are adjustable. These have lag bolts which fit into the hangers, and are adjusted from the top with a nut. Others are sized for a particular condition and are not adjustable. Both types produce satisfactory results.

A type of deck form economical to build and easy to strip is one built by Beaumont Bridge Corp., Columbus, Ohio. The 2 x 6 floor joists were pre-cut to fit between the girder webs with about two inches of clearance. The ends of the joists were slipped into Sure-Grip hangers as the hangers were placed over the flanges of the girders and adjusted to proper joist spacing. Since there is no vertical adjustment in these hangers, they must be fabricated for the particular girders on which they are used. Where there are cover plates or splice plates over the girder flanges, hangers with longer legs are supplied so that the joists will remain at the same level.

Sheets of 3/4-inch plywood were laid down on the joists and held in place with about three 7d nails at each end. Filler strips adjacent to the beams were tacked to each joist with one nail to prevent movement of the joists. Less than 100 pounds of nails is used to form an entire bridge deck 33 feet wide and 130 or more feet long. A small crew of men can build the complete form for a 130 to 200-foot-long bridge deck in from 3 days to a week.

After some attempts to pour an entire deck in a single pour, most contractors switched to pouring a half-width of deck the entire length of a bridge. This means setting a bulk-

(Concluded on next page)



the dirt flies faster—now with MUSCLES OF STEEL

Straining laborers plying pick and shovel are a bygone memory because of today's excavating and road-building equipment. Modern power shovels and draglines use *muscles of steel*—rugged wire rope—to keep the dirt flying fast.

Helping to clear the way for needed highways is another of the important ways in which Wickwire Rope contributes *muscle* to America's might.

You'll find Wickwire Rope, too, in the mines and the quarries... in the oil fields and logging camps... with the fishing fleets... and in numerous materials handling operations. Whatever the job may be, the extra care and quality fabrication that goes into Wickwire Rope proves itself in longer life, more economical service and utmost reliability.

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THE COLORADO FUEL AND IRON CORPORATION

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2533



(Continued from preceding page)

head down the centerline of the bridge. Beaumont Bridge Corp. capped this bulkhead with a $1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{8}$ -inch angle to provide a smooth hard surface for the vibrating strike-off and screed, and to aid in finishing a neat joint. A $1\frac{1}{4}$ -inch pipe screed was commonly used near the curb line to support the other end of the strike-off. In finding a support for this screed, contractors again had an opportunity to use their ingenuity.

A P&H Model 555-TC truck crane sets a steel girder for a bridge approach span which will carry the turnpike over a local road. Stiffeners and lighter sections are handled by the P&H 355A-TC at right.

C&E Staff Photo



Wire Rope at Work—A sign of progress, a sign of the times, was this construction scene on the Delaware River Extension of the Pennsylvania Turnpike. As a means of bypassing Philadelphia traffic and providing a link with the neighboring New Jersey Turnpike, the new extension should be a boon to motorists, both east-bound and westbound.

The girder shown in the photograph, the one being lifted into place, is part of a new bridge that crosses the Schuylkill River at Bridgeport, Pa. Weighing approximately 37 tons, this structural member was handled by a big stiffleg derrick rigged with Bethlehem wire rope. Here the job called for strong Purple Strand, the rope that tames the meanest lifts—and the hefty girder proved no problem at all.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others: CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING



Some use the standard fabricated screed chairs, and others use gadgets welded to the girder flanges.

Concrete Finishing

Concrete is almost universally placed with cranes and buckets. Vibrators work the concrete down around the reinforcing steel, and vibrating screeds strike off and finish the surface. Ruckman-Hansen Inc., Fort Wayne, Ind., building some of the structures on the same sections, used a steel beam with a mechanical vibrator to strike off concrete as it was placed. They then followed up with a Whiteman vibrating screed containing a Master electric vibrator. All contractors are attempting to get a finish as much like the normal turnpike paving as possible.

Steel and plywood linings are extensively used on the face forms for the parapets on each side of the bridge and the curved exterior face. Exposed exterior faces are given a rubbed finish.

In addition to the 282 structures being used for highway grade separations, the turnpike requires 41 structures for carrying railroads over or under the turnpike, and 38 stream crossings, four of which are major river crossings. These four, started in advance of other construction on the turnpike, are now either completed or nearing completion.

The largest of the spans is the Cuyahoga River bridge, which is 2,682 feet long. Other major river crossings are the Maumee River bridge, 1,394 feet long; Huron River bridge, 1,108 feet long; and Sandusky River bridge, 916.5 feet long. One arch bridge, built by Al Johnson Construction Co., subcontractor to Western Contracting Corp., carries State Route 8 over the turnpike at the village of Boston Heights. This crossing is near the deepest part of the largest rock cut on the turnpike, and is approximately 80 feet from the bridge deck down to the roadway.

THE END

C. I. T. Plan Balances Payments, Depreciation

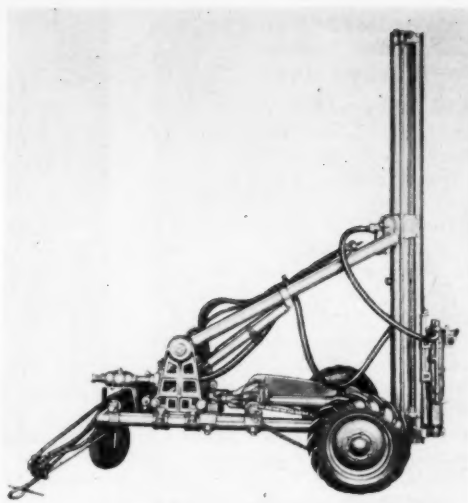
Under a new financing plan offered by the C. I. T. Corp., New York, N. Y., time payments for construction equipment will be graduated to match depreciation of the machine, rather than being made equal.

This means that buyers of such equipment will be able to pay for a machine at about the same rate as its value depreciates. In the case of a machine with a useful life of six years, about 71 per cent of the depreciable cost of the machine will be written off during the first three years of a six-year contract. During these years, when depreciation is highest, the market value of the machine is dropping and repair costs are relatively light. Later, when repairs are more expensive and depreciation is less, payments will be smaller.

The new plan, which takes advantage of the fastest depreciation schedule permitted by the new tax law, is available to contractors now. Normal down payments on machines will still apply, and the balance of payments will be made on a monthly basis. The finance charge will be 4.25 per cent, multiplied by the number of years of the contract and applied to the original unpaid balance of the cost of the equipment.

CONTRACTORS AND ENGINEERS

An air motor and a special axle have been added to the Cleveland Model DR-30 wagon drill to make it a self-propelled machine.



Wagon Drill Offered As Self-Propelled Unit

■ The addition of an air motor and a special axle to make its Model DR-30 wagon drill self-propelled has been announced by Cleveland Rock Drill Div., 12500 Berea Road, Cleveland 11, Ohio. These changes were made to provide more flexibility for deep-hole drilling and to save set-up time.

The Cleveland air motor offers plenty of power for propulsion over rough terrain. A similar air motor is also used for raising and lowering the wagon-drill boom to further speed the drilling operation. Power is transmitted from motor to wheels by an enclosed chain drive. The wheels are mounted on an automotive-type axle.

The air feed on this machine has an 8-foot travel for 6-foot steel changes.

For further information write to the company, or use the Request Card at Page 18. Circle No. 805.

New Leveling Device

■ A new camera-shaped leveling tool indicates automatically whether the target is level. The device, mounted on a tripod, employs an optical principle that uses no cross hairs, bubbles, or leveling screws. No focusing is necessary.

The Cowley Compact automatic level is available from the Engis Equipment Co., 431 S. Dearborn St., Chicago 5, Ill. It is expected to find use in building construction, paving, and pipe laying.

For further information write to the company, or use the Request Card at page 18. Circle No. 693.



Shores and Column Clamps

■ Standard and extension-type shores and a line of column forming clamps are illustrated in a folder from Baker-Roos, Inc., 602 W. McCarty St., Indianapolis 6, Ind.

The standard Rooshor is a complete one-man shore consisting of two moving parts. It has an automatic locking feature, and there are no adjustment-screw threads to become clogged. The literature also shows how this shore is used with pans to make up the Roospeed forming system for roof slabs.

The versatile extension-type Rooshor, also illustrated, can be used as a flat-head shore, a male-head shore, or an extension shore. It is offered in sizes that adjust from 8 to 14 feet, and from 6 feet to 10 feet 6 inches. Column clamps shown are avail-

able in hinged-bar and single-bar types to fit a wide range of column sizes.

To obtain this literature write to the company or use the Request Card at page 18. Circle No. 741.

Two Light-Duty Hoists

■ Two new light-duty single-drum hoists have been announced by the O. K. Machinery Division of John C. Motter Printing Press Co., P. O. Box 351, Columbia, Pa.

Features of the hoists are anti-friction bearings and fabricated-steel side frames. The J-8 has a standard line speed and load capacity of 125 fpm at 1,300 pounds, while the J-15 is rated at 150 fpm at 2,000 pounds.

For further information write to the company, or use the Request Card at page 18. Circle No. 735.

*"We cured
60 headaches
by replacing
3 oils with 1"*



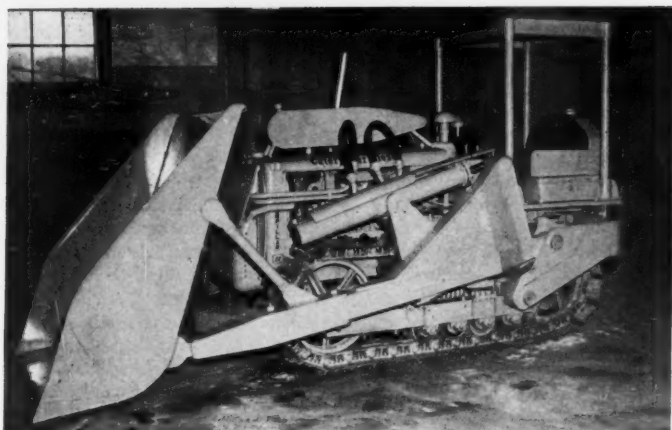
For three years, a large midwestern road builder had engine troubles by the truckload. Sludge formed in the crankcases of more than 60 trucks, bull dozers, scrapers and heavy roadbuilding machinery working under every condition from idling to moving tons of earth. Rings stuck. Valves were coated with heavy deposits. Oil had to be drained in 60 hours or less.

Sinclair Lubrication Engineer Carl Schmidt reports: "Oil breakdown was a big factor, even though the company was using three different oils. I suggested Sinclair TENOL®, pointing out that its superior qualities would offer maximum protection to heavy working engines, and at the same time prevent sludge formation during light duty operations. A test was conducted on 20 units using TENOL."

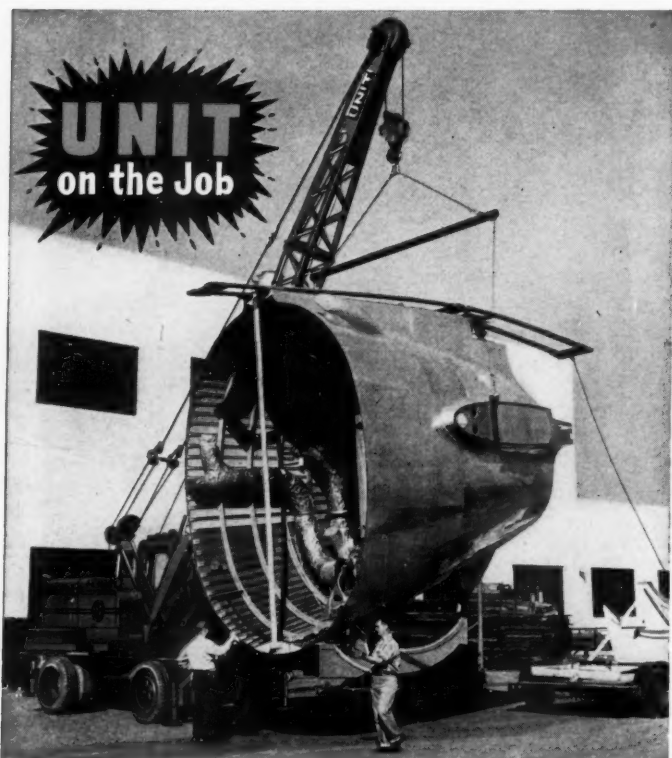
Engineer Schmidt continues: "The results have been excellent. Drain periods have been extended to 130 hours, with a big saving in oil. Engines are cleaner, with no valve chamber deposit. Stuck rings are a thing of the past. In addition to the direct gallon consumption savings, the use of one oil in place of three means more economical inventory control. TENOL proved so superior that after 30 days, all units were switched to this heavy duty oil."

SINCLAIR LUBRICANTS

Why not give a Sinclair Lubrication Engineer the chance to help solve your lubrication problems. There's no obligation. Contact your local Sinclair office or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.



The McEwen hydraulic overhead loader, a Canadian machine available through Caterpillar dealers, features oscillation control for working efficiency.



picking up a "stub" the easy way

Typical of the powerful "pick-up" ability of UNIT Cranes is the above performance . . . loading a giant aerial "fish" or tail-stub assembly onto a truck trailer. Inside this huge stub, two jet-like gasoline heaters will be installed, with heating capacity comparable to that required to heat 12 six-room homes! UNIT torque drive provides full, steady, nonstalling power . . . greater lugging power . . . elimination of shock loads on machinery. It will pay you to investigate these and other UNIT advantages. Write for Bulletin L-302.

UNIT CRANE & SHOVEL CORP.
6309 West Burnham Street • Milwaukee 14, Wisconsin



357 Mobile UNIT
the ONE-engine, ONE-man Unit . . . self-propelled, travels anywhere, rides on rubber, quickly convertible, fast, reliable.

UNIT

1/2 or 3/4 YARD EXCAVATORS... CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

SHOVEL	DRAG	CLAM	HOE	CRANE	MAGNET
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All Models Convertible to ALL Attachments!

Loader-Dozer Features Oscillation Control To Fit Job at Hand

Free track oscillation while dozing and oscillation restriction while loading are the features of the McEwen hydraulic overhead loader and angle-blade dozer. The maker, the Atlantic Bridge Co., Ltd., of Lunenburg, Nova Scotia, points out that this gives maximum efficiency for operations. The machine is designed for the Caterpillar D2 tractor.

Bucket capacity is one cubic yard. Loading from a bank, the unit's 16-second load cycle permits it to load a 5-cubic-yard truck body in under 2 minutes. The bucket handles 4 cubic yards of snow per scoop.

Other features include fingertip control. With no "in-between" levers, there are few wearing parts, with only four rotating points. The unit converts from loader to dozer in 15 minutes, with one operator doing the job.

For further information write to the company, or use the Request Card at page 18. Circle No. 806.

Portable Power Plants

A bulletin describing its new standard line of power plants is available from Katolight Corp., First Ave. at Chestnut, Mankato, Minn.

The brochure describes the company's portable 3,600-rpm, manually-starting models offered in sizes of 650, 1,350, and 2,000 watts. Also covered is an 1,800-rpm series driven with air-cooled engines, with models in sizes from 500 through 5,000 watts.

Larger units to 50,000 watts are shown with both air and water-cooled engines. The brochure describes each individual unit in considerable detail, giving ratings, general features, and accessories. A complete price sheet will be sent with the bulletin.

To obtain Bulletin LP354 write to the company, or use the Request Card at page 18. Circle No. 807.



The Super Hole-A-Matic diggers are equipped to work in hard materials.

Hole Diggers Penetrate Hard Soil Materials

A new hardpan boring head for its Super Hole-A-Matic diggers is the latest development of the Multi-Matic Corp., 14741 Bessemer St., Van Nuys, Calif. The company announces that the cutting blades of the diggers now have tungsten carbide edges to grind and pulverize all types of soil, including decomposed granite, hardpan, and caliche.

The Super Hole-A-Matics dig holes from 2 to 16 inches in diameter to 30 feet or more in depth. The one-man-operated portable earth-boring machines operate from the Gen-A-Matic portable gas-engine generator or similar power sources in remote locations.

For further information write to the company, or use the Request Card at page 18. Circle No. 683.

Promotion at Thew

V. H. Gordon has been made purchasing agent for the Thew Shovel Co., Lorian, Ohio. Formerly assistant agent, he has been with the department since 1946. Previously, he was director of purchasing at Cleveland Co-operative Stove & Foundry.

FULL HEAVY BLOWS WARRINGTON-VULCAN SINGLE-ACTING STEAM PILE HAMMERS

The Warrington-Vulcan packs all the power you'll ever need at any pile driving job. Operates at medium steam pressure, delivering a moderate frequency of low velocity blows from relatively heavy ram.

WRITE TODAY FOR COMPLETE DETAILS
AND NAME OF NEAREST DISTRIBUTOR



Manufacturers of Pile Driving Hammers and Pile Extractors Since 1852
VULCAN IRON WORKS • 329 NORTH BELL AVENUE • CHICAGO 12, ILL.

CONTRACTORS AND ENGINEERS

New Process Uses Consumable Electrode For Mild-Steel Welding

■ A new welding process developed by Westinghouse brings the advantages of the consumable-electrode process to the welding of mild steel at economical operating costs. The key to the new process, which uses ordinary welding grade argon to shield the arc, is a new coated wire, West-ing-arc MS-20 wire. This wire produces best results when used with a newly designed Westinghouse welding gun, a wire control, and a new constant-potential power source—the Model RCP 500-ampere dc arc welder.

The new process may be used on mild steels, with or without normal mill scale, on thicknesses from 1/16 inch up. It can be used as either a semiautomatic process, in which an operator holds the gun; or in automatic processes, in which the gun is clamped into position and the work



The new West-ing-arc process brings the advantages of the consumable electrode to mild steel welding.

moved or the wire fed through an automatic head. Primarily intended for horizontal and flat position welding, the new process is not yet developed for vertical or overhead welding. The weld produced has virtually no slag covering.

For further information write to the Arc Welding Dept., Westinghouse Electric Corp., Ellicott Square Bldg., Buffalo 3, N. Y., or use the Request Card at page 18. Circle No. 694.



Measuring distances becomes a one-man operation with the Mainco measuring wheel.

Distance-Measuring Wheel

■ With a Mainco distance-measuring wheel, one man can accomplish the work ordinarily done by two men with a chain or tape. Holding the extension handle, the operator can roll the measuring wheel along the ground. A counter, geared to the wheel, indicates feet traveled. Inches are graduated on a stationary disk. A spring-operated plunger brake keeps the wheel locked, while a trigger inside the handle releases the brake.

The counter has a capacity of 99,999 feet, and can be reset easily. The weight of the device is 5½ pounds.

For further information write to the Maintenance Co., Inc., 453 W. 42nd St., New York 36, N. Y., or use the Request Card at page 18. Circle No. 740.

Asphalt Paving Tools

■ The Iroquois line of asphalt paving tools is illustrated in a leaflet from Posey Iron Works, Inc., Lancaster, Pa. The line shown includes asphalt smoothers, tampers, dippers, pouring pots, rakes, and hand shovels.

The tampers and smoothers are designed to stand up under repeated heating and to retain heat.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 751.

The Jumbo salamander delivers 125,000 Btu per hour burning less than a gallon of ordinary fuel oil.

Fast-Heating Salamander

■ A salamander that produces 125,000 Btu per hour while burning less than a gallon of fuel is available from West Coast Products Co., 3120 Fifth St., Riverside, Calif. The Jumbo salamander can be set for constant heat, and reaches maximum heat in a few moments. The fire can be extinguished in 30 seconds.

Operated properly, the heater burns without smoke and delivers heat for up to 20 hours without refilling. Fuel capacity is 9 gallons.

For further information write to the company, or use the Request Card at page 18. Circle No. 757.



**Aetna bonds contracts totalling
\$50,615,494 on the new
OHIO TURNPIKE**

The Aetna Casualty and Surety Company has written bonds on contracts totalling \$50,615,494 for contractors engaged in construction of the new 241 mile Ohio Turnpike. This represents nearly one fourth of the super highway's total estimated cost of \$211,875,568.

Here is impressive evidence of the confidence Aetna enjoys among some of the country's leading general contractors, who know that Aetna's coast-to-coast service facilities match their own countrywide operations. They know, too, that Aetna's experienced and cooperative personnel can expedite the prompt handling of their bonds, no matter where their next project is located — or how complex it may be.

Next time you need a bond, why not call the Aetna representative in your community and join the ranks of hundreds who bond with Aetna — always.

No job too big--no job too small

AETNA CASUALTY AND SURETY COMPANY

AFFILIATED COMPANIES: AETNA LIFE INSURANCE COMPANY
AUTOMOBILE INSURANCE COMPANY • STANDARD FIRE INSURANCE COMPANY
HARTFORD 15, CONNECTICUT



STURDILITE

Heavy-Duty FLOOD LAMPS

For Better Light • Longer Service
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Available in 6-8, 12-16, 24-28, and 110-120 voltages.

Rubber Mounted Base Standard Model

Write for Illustrated Bulletin.

Transport dump trailers are now offered in a wide range of capacities.



Line of Dump Trailers

■ A new line of single and tandem-axle dump semitrailers is offered in a wide range of capacities by Transport Trailers, Inc., P. O. Box 968, Cedar Rapids, Iowa. The Transport dump trailers are available in either single-cylinder hydraulic hoists or twin telescopic-hoist arrangements. They have a 45-degree dumping angle for clean discharge of sticky loads.

The dump semitrailers are designed for maximum legal load limits and for operation over all types of terrain.

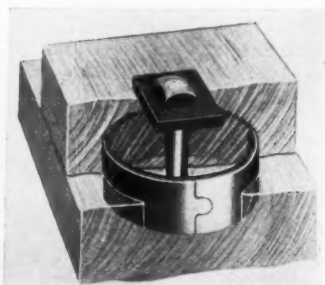
For further information write to the company, or use the Request Card at page 18. Circle No. 811.

Timber Rings Simplify Light-Truss Construction

■ By making strong timber joints quickly, Cleveland timber rings make it possible to pre-assemble light wood trusses on the ground for economical small building construction. Such trusses are made with 2x6 rafters and 2x4 ceiling joists across the bottom for spans up to 30 feet. Usually spaced on 24-inch centers, these trusses carry all the roof load and permit the closing in of small buildings and homes before partitions are set.

The Cleveland Timber Rings, made by Cleveland Steel Specialty Co., Inc., 3781 E. 91st St., Cleveland 5, Ohio, are also used in wood arches, bridges, and towers. They are set into timbers in grooves cut by the Cleveland Grooving Tool, so that half the ring is embedded in each timber at the point of contact. The joint is completed with bolt and washer. The rings are split, with tongue-and-groove joint, insuring tight contact with the wood.

For further information write to the company, or use the Request Card at page 18. Circle No. 698.



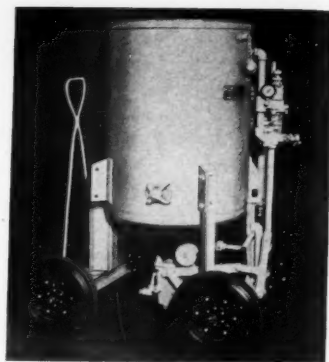
With Cleveland timber rings, light wooden trusses can be pre-assembled.

Ruemelin sand-blast machines may be obtained in portable wheel-mounted models. The unit shown has a capacity of 1,000 pounds of sand.

Portable Sand Blasters

■ Portable sand-blast machines that deliver a high-velocity abrasive stream are made by Ruemelin Mfg. Co., 3860 N. Palmer St., Milwaukee, Wis. These machines are used by contractors in cleaning bridges and buildings, preparing buildings for waterproofing, and removing laitance from concrete surfaces. They are offered for use with 3/32 to 1/2-inch nozzles to accommodate large or small compressors.

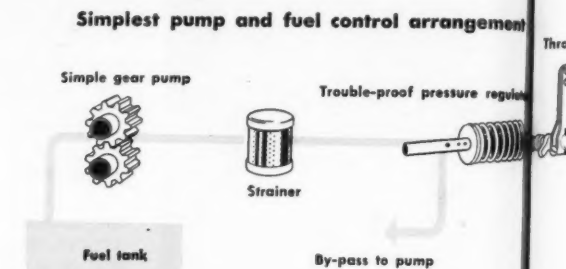
The Ruemelin line includes models with tank capacities ranging from 50 to 2,000 pounds of sand. Units may



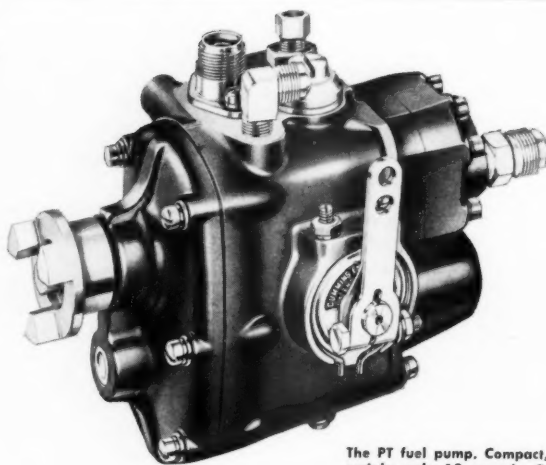
be obtained mounted on rubber wheels and equipped with a swivel axle and drawbar handle.

For further information write to the manufacturer, or use the Request Card at page 18. Circle No. 719.

Here's the simplest diesel fuel system ever developed!



Cummins new PT fuel system



The PT fuel pump. Compact, easy to handle, weighs only 13 pounds. Does not have to be timed to engine, quick and easy to install.



The PT injector utilizes the exclusive Cummins principle of fuel injection which has set the highest standards of performance and economy for more than 20 years.

THE revolutionary new PT fuel system, now standard on all Cummins Diesels, has fewer and far simpler parts than carburetor and ignition systems or ordinary diesel fuel systems. It is easy to understand, simple to work with, can be serviced by any mechanic. No longer any need for fuel system specialists! The PT fuel system has under-

gone two years of field testing and millions of operating miles under every conceivable condition. Its dependability record is phenomenal. Operators report even less fuel consumption than with earlier Cummins fuel systems and far less cost of maintenance. The PT fuel system can be installed on any Cummins Diesel built since 1932.

Cummins

leader in lightweight high speed diesel power

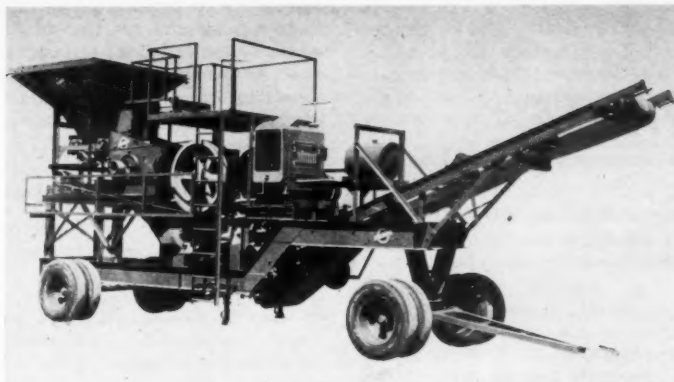
Cummins Diesels (60 to 600 h.p.) are built for and used by original equipment manufacturers in highway trucks, off-highway trucks, power shovels, scraper units, buses, motor graders, logging yarders and loaders, oil well drilling rigs, electric power generators, irrigation systems, work boats, and pleasure craft.

New Portable Plant Unit For Scalping and Crushing

■ A new Telsmith single-pass scalping and crushing plant has been placed on the market. The capacity of the unit ranges from 55 to 75 tons per hour.

The highly mobile plant is designed to produce low-cost road-building aggregate for counties, townships, and small crushing contracts. It is simple to operate and can be controlled from the ground or from the operator's platform. The plant is recommended for jobs in which the finished product does not require grading.

Components include a large 1 3/4-cubic-yard receiving hopper with a 6-foot x 6-foot 4-inch opening and removable bar grizzly; a reciprocating plate feeder with adjustable stroke; a Telsmith four-bearing scalping



Mobility is an important feature of this new Telsmith scalping and crushing plant.

screen; a Telsmith roller-bearing jaw crusher with a cast-steel frame; and a folding conveyor belt. Four stabil-

izing screw jacks support the plant in operation.

For further information write to

the Smith Engineering Works, Box 723, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 699.

Pipe-Machine Chuck

■ A new wrenchless power-grip-type chuck for 1/8 to 2-inch pipe machines can be sized by an easily-operated hand wheel. It is now being marketed by Beaver Pipe Tools, Inc., Warren, Ohio. Tightening on the new Beaver Wrenchless chuck is done with machine power and not by hand. When power is turned on, the roller grip jaws tighten.

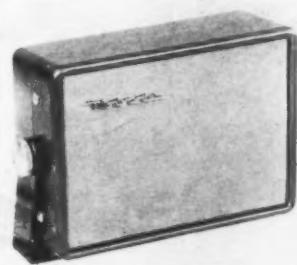
According to the manufacturer, the chuck cannot lock, slip, or crush pipe or tubing, and will not mar soft material.

For further information write to the company, or use the Request Card at page 18. Circle No. 724.

New Radio Speaker Provides Clearer Messages

■ To improve the intelligibility of two-way-radio messages, Motorola now offers a new inverted-cone speaker with a cone area as much as 43 per cent greater than that of most speakers currently in use. The new speaker is included as a standard accessory in Motorola two-way radio units.

With this speaker, women's voices or men's voices are easier to understand because the entire voice range



This new inverted-cone speaker now supplied with Motorola two-way radios has a large cone area to make messages more intelligible than is usual with mobile radios.

is transmitted and reproduced more uniformly. According to the manufacturer, the advantages of this speaker will be especially apparent in fringe reception areas and where there are loud noises.

A unique feature of the speaker is that the magnet assembly is actually inside the cone to reduce space requirements. Also, because of a universal trunnion mounting used, the speaker is easier to mount on the limited space available on vehicle firewalls.

For further information write to Motorola Communications & Electronics Div., 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 738.

Leschen Division Names New District Manager

Managing the Pacific Northwest district for Leschen Wire Rope Division, H. K. Porter Co., Inc., is Herbert L. Waltman. His district includes Washington, Oregon, western Idaho, Montana, and North Dakota. He has headquarters in Seattle.

Mr. Waltman joined Leschen as a salesman in 1941, and he was manager of the Denver sales district before his present appointment.

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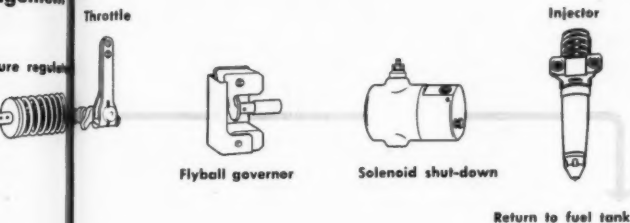
system simpler to work with than gasoline carburetion and ignition

PT advantages over gasoline systems:

No contact points to adjust	No vapor-lock problems
No condenser to replace	No flooding
No spark coil to short	No choking or priming
No wiring harness to short	No needle valves to clog
No spark plugs	No butterfly valve
	No float level to maintain
	No float valve to stick

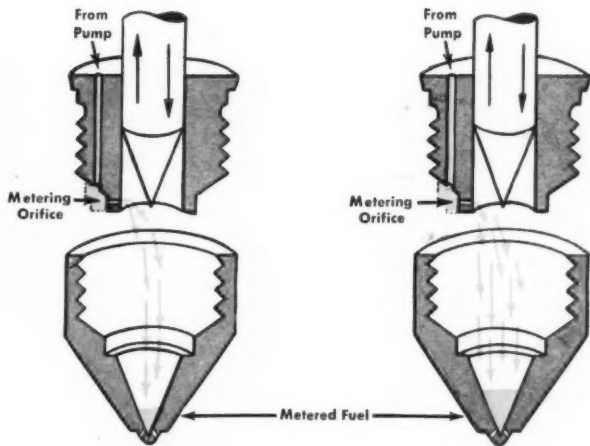
PT advantages over ordinary diesel systems:

No fuel rack adjustments	No distributor discs
No check valves	No metering pumps
No needle valves	No high-pressure fuel lines
No helixes	No fuel pump timing



Simplest Fuel Metering Device

The principle is simply that the amount of fuel flowing through a fixed orifice varies according to the amount of pressure on the fuel. Pressure is controlled by the throttle on the PT pump. Fuel flow through orifice is cut off as injector plunger, actuated by engine camshaft, moves down to inject fuel.



When engine is under partial load, fuel pressure is low, and only a small amount of fuel passes through orifice into injector cup.

When engine is under full load, fuel pressure is increased, and greater amount of fuel passes through orifice into injector cup.

Mail this today, and get more PT facts!

CUMMINS ENGINE COMPANY, INC.
Columbus, Indiana

Dept. CE-12

Please send me free illustrated folder, "Cummins PT Fuel System."

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Company _____

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City _____ Zone _____ State _____

CUMMINS

AVOID LEGAL PITFALLS

Pipeline Contractor Was Liable for Man's Injury

THE PROBLEM: A contractor laying pipe for a gas company undertook to attach the line to the company's high-pressure gas main. Plaintiff, an employee of the contractor, was injured in manipulating a valve on the gas main that was involved in making the attachment. Assuming that there was

neglect to use due care for the safety of plaintiff, who was at fault—the contractor or the gas company?

THE ANSWER: The contractor. (*Wellman v. East Ohio Gas Co.*, 113 N. E. 2d 629, decided by the Ohio Supreme Court.)

The court said the case was governed by the general rule that where a contractor undertakes a job that endangers his employees, the re-

sponsibility to guard against the danger is his and not that of the owner. (But, of course, this assumes that, for the time being, the instrumentality that presents a hazard is under the control of the contractor, not the owner.)

Inspection Was Waived

THE PROBLEM: A subcontract for landscaping a government housing project specified that the work was subject to inspection and approval by a Housing Administration inspector, who could reject materials or workmanship which, in his judgment, did not conform to specifications. Was this provision subject to waiver by the general contractor?

THE ANSWER: Yes. (*Freeman v. Stanbern Construction Co.*, 106 Atl. 2d 50, decided by the Maryland Court of Appeals.)

The court pointed to a comparable situation in a case decided long ago by the United States Supreme Court. (*Wood v. City of Fort Wayne*, 119 U. S. 312, 7 S. Ct. 219, 30 L. Ed. 416.) There, a waterworks-construction contract provided that no claim could be made for extra work not done under written order of the engineer and municipal trustees. The court upheld the contractor's right to collect for extra work done under a change of plan not covered by such a written order.

Bid Bond Considered Valid

THE PROBLEM: An advertisement for bids for municipal building construction called for a certified check for 10 per cent of the amount of the bid. The lowest bidder submitted a bond instead of a check. Could the governing municipal board waive the failure to submit a check and award the contract to the bidder?

THE ANSWER: Yes. (*Bryan Construction Co. v. Board of Trustees, Public Library, Montclair, N. J.*, 105 Atl. 2d 303, decided by the New Jersey Superior Court, Appellate Division.)

The court upheld dismissal of the plaintiff's suit to vacate the award of the contract. The plaintiff had been second low bidder and had submitted a certified check.

The court reasoned that the bidding instructions permitted in the alternative a bond or check, that acceptance of the bond was permissible under reserved power by the board to waive "minor formalities", that there was no fraud or collusion, that the defendant's bid meant a saving of more than \$23,000 to the municipality, and that the defendant was prepared to give an adequate performance bond.

State Highway Director Was Not Subject to Suit

THE PROBLEM: In Ohio, as elsewhere, the state is not subject to suit for damages unless it has consented by statute. Was the state highway director subject to suit for personal injuries to travelers on a state highway bridge which collapsed, even if the accident could be traced to negligent performance of his official duties?

THE ANSWER: No. (*Providence Washington Insurance Co. v. City of Garrettsville*, 120 N. E. 2d 501, decided by the Ohio Court of Common Pleas, Franklin County, 120 N. E. 2d 501.)

The court followed the example of many other courts in reasoning that a suit to subject a state official to personal liability for negligent performance of his official duties is, in legal effect, a suit against the state.

Contractor Not Liable For Defect Due to Plans

THE PROBLEM: A gymnasium-construction contract bound the contractor to make good for defects in workmanship developing within one year after final acceptance. Was he liable for buckling of the floor within that time due to moisture conditions, there being no proof that the plans and specifications provided by the owner had not been followed?

THE ANSWER: No. (*Harvard v. Board of Supervisors, Humphreys County, Miss.*, 70 So. 2d 875, decided

THE LIFT OF THE TIDE and Expert "Know-How"

Combined with ROGERS TRAILERS IN MAKING THIS 250 TON MOVE



This dredge weighing 181 tons was drawn from a creek at Repaupo, N. J., moved 5½ miles and launched in the Delaware River. Additional equipment, a total of 250 tons, was also moved in 20 loads.

A special ramp was built at the river, the dredge "winched" into position and the lift of the 6 foot tide used to float the dredge.

Two weeks were required for this entire operation. But the actual moving was done in one day on two Rogers 50-ton low bed trailers and two Rogers 75-ton dollies.

"KNOW HOW" based on long experience was displayed by E. A. Gallagher of Philadelphia in this unusual move. Apparently, too, they KNOW that Rogers equipment can't be beat for these difficult operations.

EXPERIENCE Builds 'em

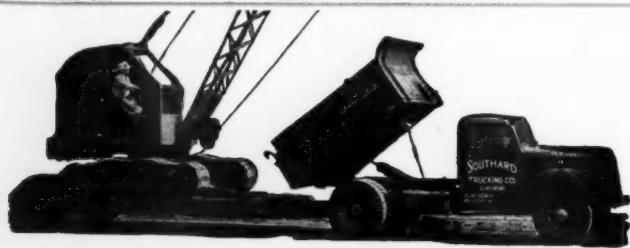


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Adjusts in Seconds!

Test Waco all-steel Shores against others on the same job . . . like the Smith Construction Company did in New Haven . . . and you'll see for yourself how Waco saves days and dollars! That's because Waco Shores are faster to set up, faster to take down and faster to handle from start to finish.

Only three shore sizes handle all your shoring jobs. Choice of plate or "I" type head to fit every shoring requirement.

MEMO FROM THE COST ACCOUNTING DEPARTMENT

It's good business to own enough Waco Shores to handle most jobs . . . then rent extras for unusual requirements. On the average, Waco Shores pay for themselves in less than a year and you're money ahead from then on. There's no maintenance upkeep or replacement cost on Waco all-steel Shores so the cash you save on equipment rental and man-hours is clear profit.

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CONTRACTORS AND ENGINEERS

Edited by A. L. H. STREET Attorney-at-Law

These legal extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

by the Mississippi Supreme Court.)

The court followed the generally recognized rule of law that a contractor is not liable for damages due to defects traceable to insufficient plans prepared by the owner's engineer or architect, unless the contractor has guaranteed their sufficiency.

Liability to Owners Of Abutting Property

THE PROBLEM: Where a pipeline contractor so filled a trench as to leave a ridge which obstructed surface drainage to the damage of abutting landowners, in violation of a contract with the government, was the government liable to the landowners for the damage and therefore entitled to settle their just claims and deduct the amounts from sums due the contractor?

THE ANSWER: Yes. (*Brown & Root, Inc. v. United States*, 116 Fed. Supp. 732, decided by the United States Court of Claims.)

Gov't Liable for Delay In Delivering Material

THE PROBLEM: The government agreed to furnish materials for an army base construction job in Puerto Rico. Foreseeing loss that would result from delay in receiving the materials, the contractor increased his bid \$26,781. Under the contracting officer's assurance that materials were available and there would be no delay in delivery, the contractor reduced his bid by \$26,781. There was a delay that caused loss to the contractor. Was he entitled to damages, even if the government in good faith attempted to make prompt delivery?

THE ANSWER: Yes. (*Torres v. United States*, 112 Fed. Supp. 363, decided by the United States Court of Claims.)

The court stressed the point that breach of an unqualified promise to deliver materials in time for use cannot be excused by exercise of diligence to fulfill the promise.

It cost the contractor \$140,665.33 to do work he agreed to do for \$114,201.31. But the Court of Claims allowed only \$18,305.56 damages, because part of the loss was due to delay by the government in staking out building sites, and the contractor had waived damages for that loss by signing a release which did not exclude the item, and because part of the loss was due to changes in designs of buildings made by the government under reservation of right to make such changes.

Obligations to Furnish Scaffolding for Workmen

THE PROBLEM: A subcontractor undertook demolition of buildings preparatory to new construction. While prying loose a stone on the inside of the wall, a bar man employed by the subcontractor fell 25 feet to the floor of a cellar. The distance to the ground on the outside was a little more than

12 feet. A state labor department rule required suitable scaffolding to be provided where the distance was "more than 12 feet above floor, platform, or the ground". The labor law required "a person employing" labor in demolition to afford proper protection by scaffolding. The injured man sued the owner of the building, the prime contractor, and, apparently, the subcontractor for damages. Were the owner and prime contractor liable?

THE ANSWER: No. (*Komar v. Dun & Bradstreet, Inc.*, 132 New York Supplement 2d 618, decided by the New York Supreme Court, Appellate Division, First Department.)

The court set aside a judgment of a lower court for more than \$100,000 against the owner and prime contractor in favor of the injured man. The lower court had also refused to require the subcontractor to indemnify

the owner and the prime contractor against liability to plaintiff.

The decision of the Appellate Division was influenced by the nature and effect of governing New York labor statutes and regulations. However, the court did not deny the power of the State Board of Labor Standards and Appeals to adopt a properly worded rule which would cast upon an owner or general contractor the duty of using safety devices not specified in the state labor law.

Government Held Liable For Delay, Faulty Design

THE PROBLEM: On a federal housing project the government caused damages to the contractor by delays in approving changes in the depth and design of footings, and in furnishing a faulty building design which caused

wall leakage. Was the government liable?

THE ANSWER: Yes. (*Continental Illinois National Bank & Trust Co. of Chicago v. United States*, 115 Fed. Supp. 892, decided by the United States Court of Claims.)

The court was not able to determine precisely how much of the delay caused by the government was due to breach of contract and how much was excusable because of bad weather and strikes. Likewise, there was doubt as to whether cracking of walls was due solely to faulty design, but the court decided the evidence showed that the cracking was principally caused by the design.

Paving Assessments In Pennsylvania

THE PROBLEM: Under Pennsylvania



NEW CHEVROLET TRUCKS

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keep going for less!

From the day you first put it on the job until the time comes to trade, your Chevrolet truck's going to do more work for you while you spend less to keep it going. Here's why you can count on it—

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Chevrolet's high compression ratio (in each of its three great engines) develops more power. That means you go longer before filling the tank! It means, too, you've got extra power handy whenever you need it—for greater acceleration, for an easier pull up steep grades, for steadier going through mud and sand on off-the-road jobs. So, you save not only on operating costs—you save time as well.

GREATER RUGGEDNESS PAYS OFF IN LONGER LIFE

Two-ton models, for example, are equipped with heavier axle shafts. All models have newly designed clutches and stronger frames. The best part of it is that, throughout their longer life, you spend less for their upkeep. For complete details about the model you need, see your Chevrolet dealer. He'll tell you whatever you want to know, then give you the best news of all: Chevrolet trucks are priced lower than all other lines! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

MOST TRUSTWORTHY TRUCKS
ON ANY JOB!



CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **NEW TRUCK HYDRA-MATIC TRANSMISSION***—offered on ½-, ¾- and 1-ton models. Heavy-Duty **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—improved-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—greater holding ability on heavy-duty models. **NEW RIDE CONTROL SEAT***—eliminates back-rubbing. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

*Optional at extra cost. Ride Control Seat is available on all cabs of 1½- and 2-ton models; standard cabs only in other models. "Jobmaster 261" engine available on 2-ton models; truck Hydra-Matic transmission on ½-, ¾- and 1-ton models.

law street-paving assessments can be levied against abutting property only for original construction, not for repairs. May the original paving be macadam?

THE ANSWER: Yes. (City of Philadelphia v. O'Brien, 107 Atl. 2d 587, decided by the Pennsylvania Superior Court.)

Slippery Tack Coat Caused Car Smashup

THE PROBLEM: When asphalt road work suspended Saturday noon and the route was left open to travel, there was an exposed tack coat on one side of the road. By Monday morning, rain had made the coat slippery, and there was a collision after one car skidded. Could the contractor be held liable for consequent damages on a theory that (1) it was negligent not

to erect warning signs at the area? (2) In the injured persons' suits, was it proper to show that other accidents had occurred the same morning from the same cause?

THE ANSWER: (1) Yes. (2) Yes. (Karl v. Adams, 74 S. E. 2d 325, decided by the North Carolina Supreme Court.)

Accidental Injuries to Subcontractor's Men

THE PROBLEM: A subcontract had specified that the subcontractor should be liable for accidental injuries to all persons, including the latter's employees. Did that exonerate the prime contractor from liability for injury to the subcontractor's employee, due to the prime contractor's negligence, or entitle the latter to indemnity against such liability by the subcontractor?

tractor?

THE ANSWER: No. (Broderick v. Cauldwell-Wingate Co., 120 N. Y. Supp. 2d 289. N. Y. Supreme Court, Appellate Division.) But it was a narrow decision; three of the seven judges dissented.

Bond to Pay Bills Did Not Cover Loan

THE PROBLEM: A subcontractor undertaking to clean up a federal dam site cleared by the prime contractor gave a bond under a federal statute—the Miller Act, 40 U. S. C. A. Secs. 270, 270b—guaranteeing the contractor that all bills for "labor and materials" incurred by the subcontractor would be paid. Did the bond cover money lent to the subcontractor to pay labor and material bills?

THE ANSWER: No. (Bill Curphy Co.

v. Elliott, 207 Fed. 2d 103, decided by the United States Court of Appeals, Fifth Circuit, and reversing decision by the United States District Court, Northern District of Texas.)

The Court of Appeals referred to numerous decisions of courts in other states, as well as Texas, to the effect that a bond to pay labor and material bills does not secure payment of money borrowed by a contractor even when it is borrowed for the special purpose of paying such bills.

Road Commissioner Exceeded His Power

THE PROBLEM: A gravel company wrote a California county road commissioner that it would move its portable crushing plant to a county gravel deposit and deliver crusher-run material at a "price" of \$1 per ton, plus sales tax. The letter contained other provisions to the same effect. The commissioner replied in a letter that confirmed the agreement. The commissioner was an appointee of the county board of supervisors with limited statutory powers, including power to lease road equipment, subject to the board's approval of the rental to be paid. The board had not approved his action in the particular matter, and no bids were called for on furnishing the crushed rock. (1) Was the contract void? (2) Could the board later ratify it?

THE ANSWER: (1) Yes. (2) No. (Bear River Sand & Gravel Corp. v. Placer County, 258 Pac. 2d 543, decided by the California District Court of Appeals, Third District.)

(1) The court rejected argument that the contract constituted a lease of the crushing plant to the county which the commissioner was entitled to make, subject to approval by the county board as to rental. The contract was essentially one for the purchase of road material by the county, which could only be made by the board, and by it only after inviting bids.

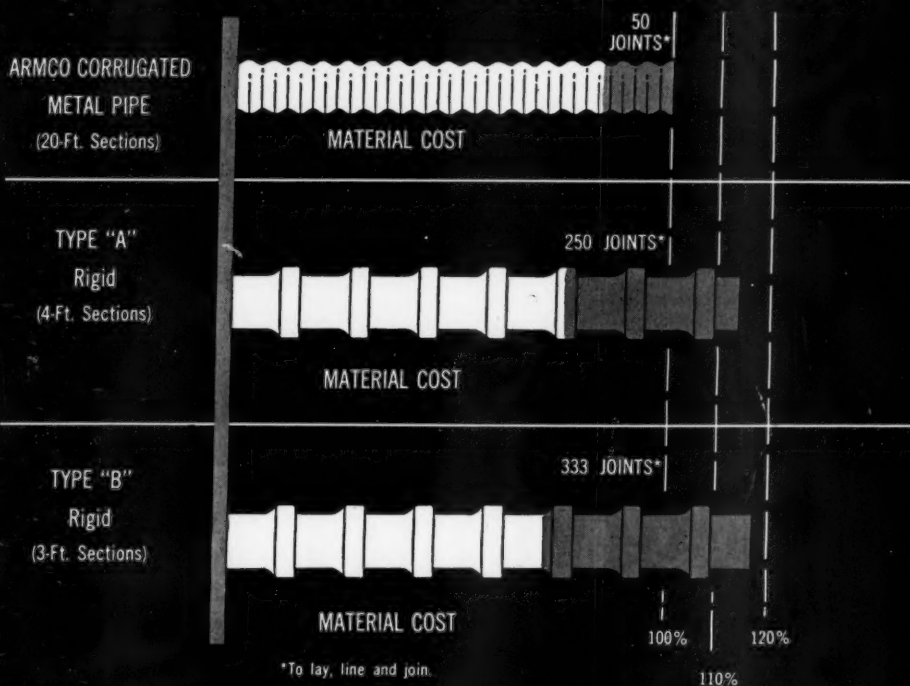
(2) The agreement being void, the transaction came within the general rule of law that a void contract made by a public official cannot be ratified.

Heat Stroke Is An 'Accident'

THE PROBLEM: If a laborer died of a heat stroke on a hot summer day while shoveling chat into a wheel barrow and pushing it to a concrete mixer, could the death be considered to have been caused by "accidental injury" within the meaning of the Oklahoma Workmen's Compensation Act?

THE ANSWER: Yes. (E. G. Nicholas Construction Co. v. State Industrial Commission, 262 Pac. 2d 893, decided by the Oklahoma Supreme Court.)

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How do
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drainage
jobs?

It's the installed cost that counts! And that is where Armco Corrugated Metal Pipe saves you time and money. It permits lower bids while you retain ample profit. Here's why. Long sections of Armco Pipe, compared to short-section rigid pipe, reduce the number of joints required by 80 per cent or more. There are fewer sections to lay, line and join with no delay for curing. Handling is easier. And thanks to the strength of corrugated metal, there is less chance for breakage. No wonder you can speed the job and save money in the bargain. Armco Corrugated Metal Pipe is supplied in diameters from 8 to 96 inches. Lengths range up to 24 feet. Bituminous coatings or ASBESTOS-BONDED Pipe protect against severe corrosion. Write for illustrated catalog. Armco Drainage & Metal Products, Inc., 1454 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

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CONTRACTORS AND ENGINEERS



The Fageol Model VO-168 heater.

Improved Hot-Air Heater

■ New electrical safety controls and an improved venting stack are features of the 168,000-Btu heat machine just introduced by Fageol Heat Machine Division, R. D. Fageol Co., Kent, Ohio. Controls conveniently grouped at the front of the new Fageol Model VO-168 include a stack switch, a safety device which shuts off the oil burner if oil does not ignite within 90 seconds after it is first sprayed on the burner. A fan-limit switch controls the blower atop the machine and also prevents overheating. A master switch cuts off all controls and motors.

The new stack makes it easy to attach an outside vent so that the heater may be used in confined areas. The machine can also be used without a vent or flue. Operating from a detached fuel supply, the heater uses regular furnace-type fuel oil or kerosene. It will also operate on 100 per cent catalytic cracked oil.

For further information write to the company or use the Request Card at page 18. Circle No. 725.

G-E Promotes Lamprey

New manager of mechanical engineering for the construction engineering section of the General Electric Co., Schenectady, N. Y., is F. Loomis Lamprey, who will coordinate engineering activities involving the overall design and construction of power generation projects such as steam, gas turbine, and atomic energy plants.

DRILLING CONTRACTORS

Diamond and Shot Core Borings, Dry Sample Borings, Grout Holes and Pressure Grouting, Foundation Testing for Bridges, Dams and all Heavy Structures

Loading manufacturers, also, of High-Speed Diamond Drilling Machines and Complete Accessory Equipment, including all types of Diamond Drilling Bits.

Write for Catalog No. 320

SPRAGUE & HENWOOD, INC.

Dept. C, Scranton 2, Pa.

Tractor-Mounted Fork-Lift Can Be Used in the Field

■ Designed for Ford tractors, the new Sherman fork-lift can be used on unpaved or rough terrain. It also offers advantages over standard fork-lift trucks, which generally have low clearance, narrow tire treads, and small wheels. The attachment operates hydraulically to lift a 4,000-pound load 10 feet.

With reversed tractor steering and a turned-around driver's seat, the fork-lift moves in the opposite direction from a conventional tractor, the rear wheels becoming the forward wheels. Power steering is provided as a standard feature of the unit.

Available for the basic lift mechanisms are 27, 33, and 48-inch lift forks and a number of other attachments.

The new Sherman fork-lift for Ford tractors.



These include a crane, angle-blade dozer, scoop bucket, concrete bucket, and concrete-block forks.

For further information write to

Sherman Products, Inc., 3200 W. Fourteen Mile Road, Royal Oak, Mich., or use the Request Card at page 18. Circle No. 730.



Model 145 Dart Truck equipped with Allison TORQMATIC DRIVE being loaded at Sunnyhill Coal Company's New Lexington, Ohio, mine. Truck is one of 10 operated by Sunnyhill.

10 trucks replace 30 — cut costs 62 %

WHEN 10 50-ton trucks equipped with Allison TORQMATIC DRIVES replaced 30 mechanical-drive 20- and 30-ton trucks at Sunnyhill Coal Company's New Lexington mine:

Operating costs dropped 18.6¢ per ton, Maintenance costs were cut 13.1¢ per ton,

And the TORQMATIC-equipped trucks now haul 32.6 more tons per truck hour.

But lower costs are only part of the story.

On-the-job accidents have dropped sharply. Drivers stay fresher, more alert because they now have no clutch pedal to push—quick-shift at full throttle with finger-tip hydraulic control—have only 3 shifts instead of 7 or 10.

Wet weather worries have almost disappeared—road maintenance costs are lower. Smooth power transmission by the Allison TORQMATIC DRIVES lets trucks drive through mud and muck—conditions that often shut down the mine before TORQMATIC-equipped units came on the job.

Big reason for lower operating and maintenance costs is shock-free power transmission by the matched TORQMATIC Converter-Transmission teams. The Converter absorbs shock loads instead of transmitting them along the drive line—protects engine, differential, drive shaft and transmission from damage.

There's an Allison TORQMATIC DRIVE for your 40- to 400-horsepower gasoline and Diesel equipment. New low-

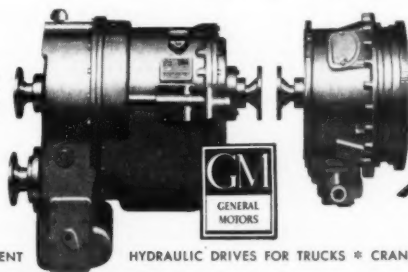
cost 40-150 h.p. TORQMATIC Converters easily fit present equipment, are completely self-contained for simple installation. Get full details about Allison TORQMATIC DRIVES from your equipment manufacturer or dealer or write: Allison Division of General Motors Box 894C, Indianapolis 6, Indiana

ALLISON TORQMATIC DRIVES

Unbeatable Team for Maximum Operating Economy

- Quick-Shifts at full throttle with finger-tip hydraulic control
- Holds power to load at all times—no clutch pedal to push—no gearshift guess
- Reduces maintenance costs by absorbing shock—eliminates engine lugging—prolongs equipment life
- First torque converter-transmission team designed to work as a unit and built by one manufacturer
- Cuts driver training costs

FIRST MATCHED
UNITS BUILT BY
ONE MANUFACTURER



COMPACT, EFFICIENT

HYDRAULIC DRIVES FOR TRUCKS * CRANES * TRACTORS * SCRAPERS * SHOVELS * DRILLING RIGS

Allison
TORQMATIC DRIVES

APPROVED for 1-course MACADAM RUNWAY HIGHWAY CONSTRUCTION



The Vibro-Tamper applies vibration and impact, gives up to 95 proctor in 2 to 3 passes. Approved by many states and Army, Navy and CAA for 1-course construction.

In waterbound work, Vibro-Tamper "runs in" screenings in as few as 2 passes—saving 50% time on spreading, brooming, and rolling.

WRITE FOR VIBRO-TAMPER BULLETIN FOR COST-SAVING DETAILS

THE INTERNATIONAL VIBRATION COMPANY
16702 WATERLOO ROAD CLEVELAND 10, OHIO

This portable Model MF welder offered by American Manganese Steel Division combines the advantages of hand welding and automatic welding. It is also offered in a cabinet model.



Semiautomatic Welder Feeds Flux-Coated Wire

A new semiautomatic welding machine combines the advantages of hand welding and automatic welding. The machine, manufactured by Amsco Division, American Brake Shoe Co., 230 Park Ave., New York 17, N. Y., regulates the arc and wire feed automatically. It retains the visibility and flexibility of arc welding.

The MF welder feeds bare wire

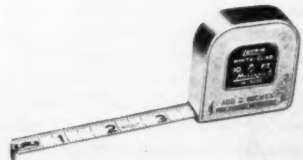
through a hand-held hopper containing magnetic flux. Flux clings to the wire as it leaves the hopper so that the wire reaches the arc with a flux covering that contributes the advantages of a manual electrode coating. The operator can weld steadily for 15 minutes if desired; the delay of replacing electrodes and the waste of stub ends are eliminated.

Primarily a wire-feed and arc-control device, the MF is easily connected to any conventional ac or dc welding machine and operates over a current range of from 150 to 500 amps.

For further information write to the company, or use the Request Card at page 18. Circle No. 688.

Decimal Tape Rule

A tape rule with a white blade graduated in fractions of inches and tenths and hundredths of feet has been placed on the market by Lufkin Rule Co., Saginaw, Mich. The new



Lufkin White Clad Mezurall is recommended for engineers, surveyors, and draftsmen.

The white blade has bold black figures and graduations and is coated with a clear abrasion-resistant plastic. The ruler is furnished in 6, 8, 10, and 12-foot lengths, and may also be obtained with regular fractional markings.

For further information write to the company, or use the Request Card at page 18. Circle No. 701.

Selected Equipment For Small Tunnel Jobs

Selecting the proper equipment for small tunnel jobs is important for full working efficiency under those close-quarters working conditions. Mayo Tunnel & Mine Equipment, Lancaster, Pa., is distributing a bulletin describing equipment especially suitable for such jobs.

The literature illustrates a variety of tunnel cars, including 1/2-yard muck cars, 1 or 2-yard side-dump cars, and air-operated locomotives. Carriages for drill jumbos, a turntable for mucking machines, 18-inch-gage car passers, and air-lock doors are also shown.

Other equipment for small tunnel work described includes a self-dumping gilly for hoisting muck boxes, muck bins, steel tunnel forms, shields, and the Mayo cement grouter.

To obtain Bulletin No. 19 write to the company, or use the Request Card at page 18. Circle No. 728.

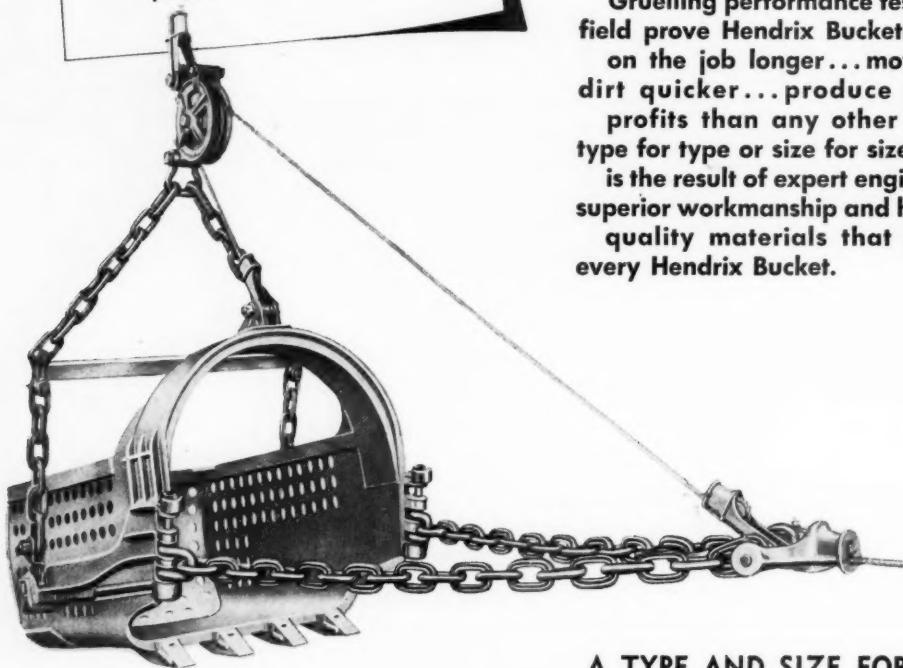
CONTRACTORS AND ENGINEERS

Compare these features...

- ✓ 20% to 40% lighter than other buckets, type for type.
- ✓ All-welded construction for greater strength and durability.
- ✓ 14% Manganese Steel Chains, fittings and reversible tooth points.
- ✓ Full Payload every trip, even in wet digging.
- ✓ Perfect Balance; handles easier, fills faster, dumps cleaner.
- ✓ Three Types for every digging purpose.

Something to tack up and remember!

Gruelling performance tests in the field prove Hendrix Buckets stay on the job longer... move more dirt quicker... produce more profits than any other bucket, type for type or size for size. This is the result of expert engineering, superior workmanship and higher quality materials that go into every Hendrix Bucket.



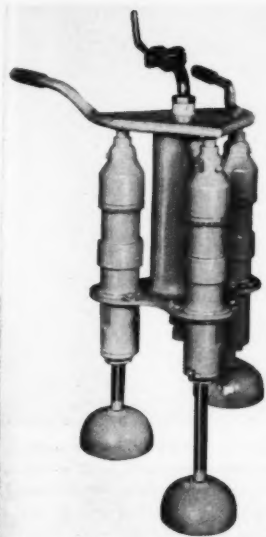
3/8 to 40 Cubic Yards



A TYPE AND SIZE FOR
EVERY DIGGING PURPOSE

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.
MANFIELD, LOUISIANA



The Triplex backfill tamper now has a new air filter that makes cleaning an infrequent and easy job.

Backfill Tamper Gets Simplified Air Filter

■ An improved air filter for the Triplex backfill tamper has been announced by The Gunderson-Taylor Co., 1237 Shoshone St., Denver, Colo.

The new Triplex tamper air filter is a 48-square-inch cylinder with a fine filter surface for complete filtering. When the infrequent cleaning is necessary, it is done by simply removing the plug and turning on the air to the Triplex. According to the manufacturer, it is necessary to remove the filter and wash it only in extreme cases.

For further information write to the company, or use the Request Card at page 18. Circle No. 813.

Fuel-Injection Pump for High-Speed Diesel Engines

■ Literature describing the operation of the Roosa-Master fuel-injection pump for all major types of high-speed diesel engines is available on request. The Roosa-Master pump, available for 4 or 6-cylinder engines, is made by the Hartford Machine Screw Co., Hartford 2, Conn. It is described as a single-cylinder opposed-plunger inlet-metering distributor-type unit.

Simplified design is an important characteristic of this pump, according to the literature. There are no poppet valves, complicated springs, gears, or ball bearings. There are also no rotating spring-loaded lapped surfaces. The unit is available with three types of governors and three styles of mounting.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 814.

Hydraulic Hook Scale Operates Without Friction

■ Its new friction-free hydraulic hook scale is described in literature made available to contractors by Martin-Decker Corp., 3431 Cherry Ave., Long Beach 7, Calif.

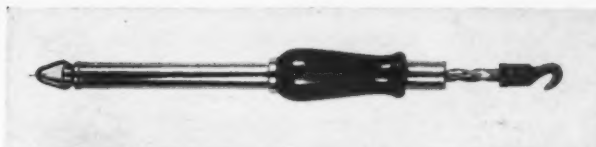
The Martin-Decker SU-20 Sensater scale has a small headroom loss and is light enough to be handled easily by one man. It is offered in models with capacities up to 20,000 pounds.

To obtain Bulletin M-25 write to the company or use the Request Card at page 18. Circle No. 726.

Aeroquip Corp. Appoints Chief Industrial Engineer

Robert W. Bownan has been made chief industrial engineer for Aeroquip Corp., Jackson, Mich., producer of reusable fittings, hose, and self-sealing couplings.

Mr. Bowman will serve as an industrial engineering consultant for the parent company and its three subsidiaries: Aero-Coupling, Burbank, Calif.; Aeroquip, Inc., Van Wert, Ohio; and Elbeeco, Jackson, Mich. Prior to joining the company, Mr. Bowman was chief of methods and standards for the Kawneer Mfg. Co., Niles, Mich.



The Rapidfire wire-tie twister ties reinforcing bars at intersections.

Hand Tool Wire-Ties Concrete Reinforcing Bars

■ A device that quickly ties reinforcing bars at intersections for reinforced-concrete construction is offered by Montgomery & Co., Inc., 7 Tichenor Lane, Newark 5, N. J. The Rapidfire wire-tie twister uses 2½ to 48-inch-long wire ties and

applies 3 full turns of tying twist with each pull of the handle. Another use for the tool is tying pipe, fence posts, and welding rods.

For further information write to the company, or use the Request Card at page 18. Circle No. 815.



Photographs taken on the job in Long Island, N. Y.

Here's what they say about the new MICHIGAN® 3/4 YARD

Contractor: Hendrickson Bros., Inc., General Contractors
Valley Stream, New York

Job: Excavation and pipe laying for Southern State Parkway, Long Island

MASTER MECHANIC:

"We tried out the new T-24 for a week; and, because it did such a good job in that short time, we bought it."

OPERATOR:

"It's got delicate control and positive action. I can put the bucket down just where I want it, pick up a cable or wooden stake and not even disturb the dirt. It's a fast machine."

OILER:

"This Michigan is an oiler's dream. The liberal use of ball bearings on shafts, drums and rollers means less wear and much less oiling. All we do is oil our T-24 once a week."

There's little to add to these Hendrickson statements—except to emphasize that you, too, will move bigger yardage faster and at less cost with a MICHIGAN Series "24" ¾-yard excavator-crane. Best way to prove it is to do as Hendrickson did . . . TRY IT! Send for the booklet "Bigger Yardage Through Air Power"; and for detailed specifications.

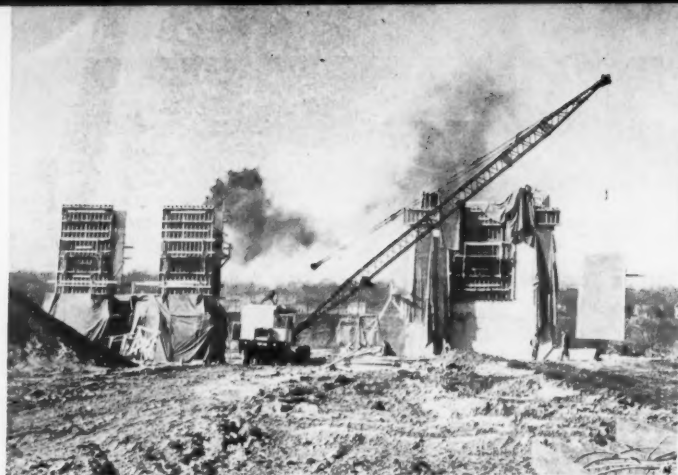
**CLARK
EQUIPMENT**

CLARK EQUIPMENT COMPANY
Construction Machinery Div.
384 Second Street
Benton Harbor, Michigan 24
Please send the booklet "Bigger
Yardage Through Air Power" and
specifications of MICHIGAN Series "24".

Name _____

Firm _____

Address _____



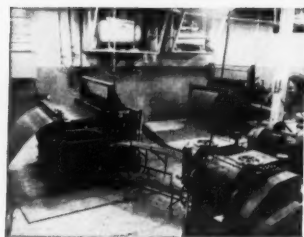
Bridge Pier Work—A Lorain Moto-Crane prepares to set a form panel in place for one of the concrete piers being constructed for this turnpike bridge. The structure, being built by the Horvitz Co., Cleveland, Ohio, will carry the expressway across a ravine.



Biggest Turnpike Span—An Adams No. 660 motor grader works on the approach to the Cuyahoga River Bridge, south of Cleveland. Wilco Builders, Inc., Brecksville, Ohio, is handling the dirt work near the 2,682-foot-long structure. Altogether, 282 bridges are being built on the new turnpike.

THREE GOOD WAYS

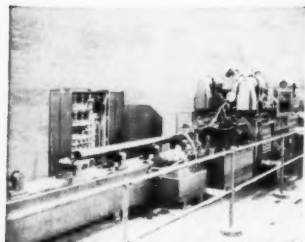
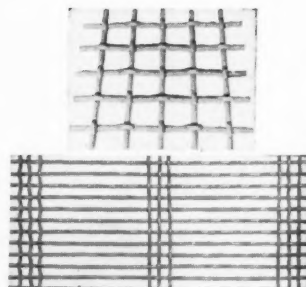
TO CUT YOUR MAINTENANCE COSTS



USE IOWEAVE SCREEN CLOTH

Ioweave is made by Cedarapids from a special analysis, oil tempered wire that will withstand fatigue and wear against abrasion. This high quality wire makes it possible to use a lighter gauge for a given size of opening, thus greatly increasing the tonnage output.

Ioweave is available in a wide range of sizes and weaves to fit your needs. Write for Bulletin CS-4.



USE CEDARAPIDS CONVEYOR EQUIPMENT

The automatic machine shown here turns out a complete conveyor idler every 28 seconds with permanently sealed, oil lubricated, heavy duty, single row, self-aligning ball bearings which eliminate the need for field lubrication. Heavy gauge steel tubing rolls insure perfect and constant balance. Cedarapids conveyor troughing roll assemblies and return idlers are available in widths from 14" to 48". Write for Bulletin CON-1.



USE CEDARAPIDS MOTORIZED HEAD PULLEYS

You can cut your conveyor maintenance costs 70% to 90% by installing Cedarapids Motorized Head Pulleys. All the drive mechanism is contained inside the pulley shell so there are no chains, sprockets or sheaves out in the weather and dirt, no chain idlers to keep adjusted and oiled, no V-belts to adjust or replace, no shafts and drives to service and lubricate. Modernize your conveyors now with Motorized-Head Pulleys. Write for Bulletin MP-1.



ALL ITEMS ALSO AVAILABLE FOR ORIGINAL EQUIPMENT MANUFACTURERS

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

The Cedarapids Line also includes: Portable and stationary crushing, screening and washing plants for stone, gravel and sand. Vibrator and revolving screens. Feeders. Hammermills. Double impeller impact breakers. Batch type and continuous mix type bituminous mixing plants. Driers. Dust Collectors. Vibrating soil compaction units.

Subcontracts Being Let For Pipeline in Spain

With invitations out for subcontract bidding, Brown-Raymond-Walsh, New York, N. Y., is moving into high gear on the construction of about 600 miles of pipeline linking U. S. bases in Spain. The proposed line, between Cadiz Bay, Seville, Madrid, and Zaragoza, requires the laying of about 10-inch-diameter welded and seamless pipeline, construction of fully-equipped pumping stations, and the building of storage tank farm terminals and all allied installations needed for a complete storage pipeline.

The prime contractor is subcontracting the work to joint-venture firms composed of at least one Spanish contracting organization and a U. S. pipeline contracting firm. The latter will be required to equip and organize managerial personnel, pipeline welders, equipment operators, and technicians required for a comparable job in this country. The Spanish firm will arrange for a supply of local skilled and unskilled labor

Get 4 BIG ADVANTAGES with Serviced

White Pigmented Concrete Curing Compounds

1. Fast, positive coverage...no missed spots
2. Reflects heat—reduces concrete temperatures 15° F.
3. Saves material...no waste or overlap
4. Does not run on sloping surfaces—"stays put" after application

Serviced White Pigmented Curing Compound is widely used in areas where atmospheric temperatures exceed 80° F. because it produces a membrane capable of reflecting heat to reduce concrete temperatures as much as 15° F. Even application, using minimum material and application time. May be sprayed or brushed.

Write for complete details and circular on Serviced Concrete Curing Compounds.



SERVICED PRODUCTS CORPORATION
6051 West 65th Street, Chicago, Illinois

CONTRACTORS AND ENGINEERS



Drainage Problems—Poor subgrade made for tough drainage work in several sections on the pike. Here an Insley backhoe digs a trench for a line of perforated corrugated pipe. Water seeps out of the bank at right.



Heavy Grading—This special rig, consisting of a Failing rotary drill mounted in a 40-foot tower on the rear of a Euclid truck, drills 6-inch holes 23 feet deep through sandrock in an average of 20 minutes.



Sealing Work—Joints are sealed with Presstite compound, applied cold through an air-operated pump. A Jaeger compressor on the Ford truck supplies air for blowing out joints and operating the pump.

for building construction, and for transporting and stringing pipeline. Bidders are required to furnish a performance bond.

Awards will be made on the basis of competitive bidding, and payment for the work will be in dollars and pesetas. Dollar payment will cover transportation and depreciation of equipment for the U. S. contractor, plus his bid price. Though Brown-Raymond-Walsh is assisting contractors in the study of the project, the firm will not assist in arranging an association of Spanish and U. S. contractors. Brown-Raymond-Walsh is handling the job from its office in Edificio Espana, Madrid, Spain.

Sales Engineer Named By Aero Service Corp.

A new sales-technical representative for Aero Service Corp., an aerial mapping and exploration firm of Philadelphia, Pa., is John L. Miller.

Aero Service Corp. serves highway engineers by mapping or exploring large areas in which construction is contemplated.

Transmission gives 10 speeds forward and 2 reverse, TIMKEN® bearings give smooth flow of power

THIS versatile new Caterpillar DW 15 Tractor delivers 150 horsepower with 10 forward speeds and 2 in reverse. To make sure its transmission gives a dependable and smooth flow of power, even under the toughest and most rugged of working conditions, Caterpillar mounts the main pinion on Timken® tapered roller bearings.

Because of their tapered construction, the Timken bearings take both radial and thrust loads in any combination. Full line contact gives extra load-carrying capacity. The pinion stays aligned. Gears mesh accurately and smoothly with minimum time-

out for maintenance and repairs. And there's less loss of transmission power because Timken bearings practically eliminate friction. Here's why: Timken bearings are designed to give true rolling motion and they're manufactured to live up to their design.

Closures are more effective, because Timken bearings keep housings and shafts concentric. Dirt and moisture stay out while lubricant stays in. And Timken bearings normally last the life of the tractor. One big reason: they're made of Timken fine alloy steel, the finest ever developed for roller bearings. We have to

make our own steel because that's the only way we can get steel good enough for Timken bearings. No other U. S. bearing manufacturer does it.

Your equipment should have *all* the advantages *only* Timken tapered roller bearings can give you. Specify Timken bearings—look for the trademark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



This symbol on a product means its bearings are the best.



How CATERPILLAR TRACTOR CO. mounts the main pinion of the transmission of its Cat DW 15 Tractor on Timken tapered roller bearings to assure a smooth flow of power.

MAGNIFYING GLASS INSPECTION OF EVERY ROLLER!



Every one of the over one billion Timken bearing rollers produced every year is inspected with powerful magnifying glasses to detect surface flaws. It's just one example of how the Timken Company insures uniform high quality.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER □ BEARING TAKES RADIAL AND THRUST —□— LOADS OR ANY COMBINATION



1460 ft.

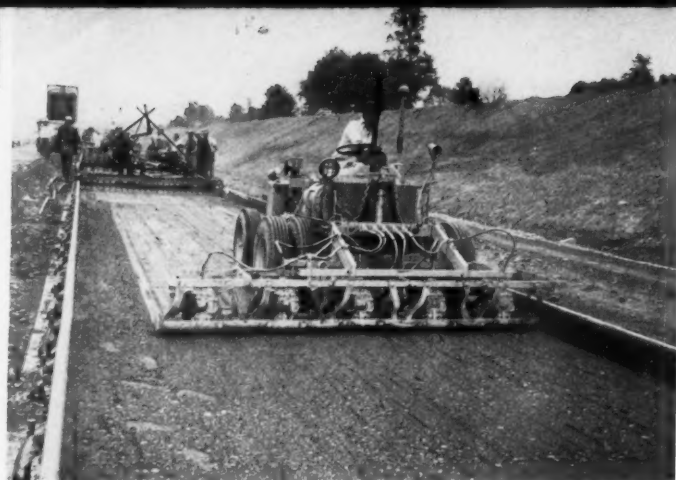
it took a B-G
**Runabout
Ditcher**

only 8 hours to
dig 1460 feet of
coral rock.



see your B-G distributor
or write

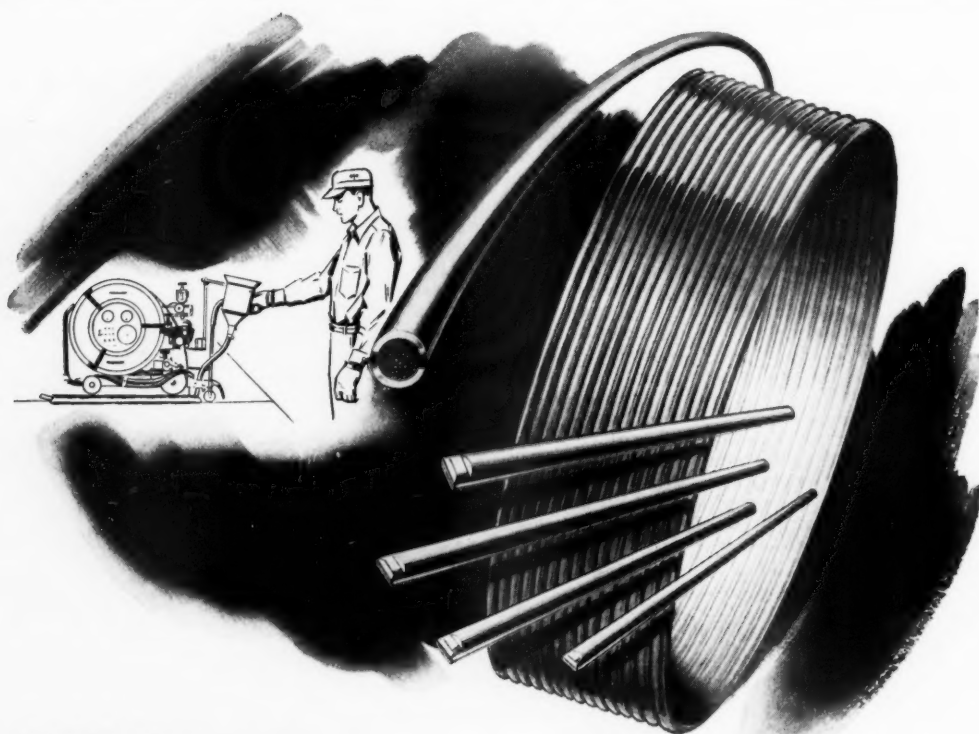
Barber-Greene
AURORA, ILLINOIS, U. S. A.



Fast Turnpike Paving—Operations on the Ohio Turnpike move along at a fast clip for D. W. Winkelman Co., Inc., Syracuse, N. Y., contractor on the 21-mile stretch between the Pennsylvania line and Youngstown. Here a Jackson vibratory compactor tamps subbase ahead of the paving crews. Two passes are required for



compaction. Concrete for the first 7½-inch lift is delivered by a Dumpcrete and leveled with a Jaeger spreader. After wire fabric is placed on this course, similar equipment lays more concrete. A Heltzel Flex-Plane finisher, Koehring longitudinal float, and hand finishers complete the job.



HAYNES 90 alloy now available in tubes and at a **MUCH LOWER PRICE**

Now you can save even more by hard-facing wearing-parts with HAYNES 90 alloy. This is because HAYNES 90 costs so much less in this new economical tube form. These new tube rods produce sound, uniform deposits that won't crumble or flake off at temperatures up to 1000°F. They provide the same high abrasion, impact, and corrosion resistance—the same dependable protection for your equipment that HAYNES 90 brought to you as a cast rod—and at a much lower price.

For manual hard-facing, HAYNES 90 tube rod comes in convenient 14-in. lengths for easy application with standard metallic-arc welding equipment. For rapid coating of large parts, HAYNES 90 also comes in coils for

mechanized hard-facing by the submerged-arc, inert gas, and open-arc methods.

HAYNES 93, HASCROME, and HAYSTELLITE alloys are also available in this economical tube rod form. HAYNES 93 iron-base rod is noted for high abrasion and corrosion resistance . . . HASCROME iron-base rod for high impact resistance . . . and HAYSTELLITE tungsten carbide rod is tops for resistance to severe abrasion.

Your local dealer carries a complete line of HAYNES hard-facing rods. Contact him for complete details. If you don't know the location of your local dealer, write to Haynes Stellite Company, a Division of Union Carbide and Carbon Corporation, Kokomo, Indiana.

See... Your local Haynes Stellite Dealer

or

Write... to Haynes Stellite Company

"Haynes," "Hascrome," "Haystellite," are registered trade-marks of Union Carbide and Carbon Corporation.

New Book Contains Handy Construction Check List

A handy check list covering various phases of building construction has been published in book form by Reinhold Publishing Corp., New York, N. Y. Compiled by Ben John Small, the book contains detailed lists of construction steps for various types of buildings.

Under the general heading of specifications are found such subjects as site work, structural work, masonry, weather protection, metal work, and finishing. Contract check lists detailing bidding and owner-contractor agreements are also included. Valuable tips for job captains and specifications writers treat methods and equipment best suited for particular jobs. The obligations of the owner, architect, and contractor with regard to specific aspects of construction are contained in a resume of AIA general conditions.

The book is priced at \$3.50, and may be ordered from the Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y.

"How to operate excavation equipment"

New book just published covers proper operation and control of all types of equipment including shovels, tractors, graders, rollers and other machinery.

This book saves time and money in training new personnel, and provides handy tips which mean less down time.

Circle number 850 on the bound-in Red Request Card for more details on "How to operate excavation equipment", plus handy order form.

Contractors and Engineers
magazine of modern construction

470 Fourth Avenue, New York 16, N. Y.

CONTRACTORS AND ENGINEERS



Big Plant for Big Job—This Blaw-Knox portable cement and aggregate plant, with cement silos capable of holding 600 barrels of material, supplies crews working on the subcontract held by S. J. Groves & Sons, Minneapolis, Minn. Cement, hauled 50 miles to the site, is delivered by International trucks with special trailers.



Transforming Countryside—A diesel-powered Galion Model 118 motor grader makes a first cut for the pike near Avery, Ohio. Grading work on this section near Sandusky is being done by Smalley Construction Co., Celina, Ohio, under a subcontract from J. A. Jones Construction Co., Livonia, Mich.

Full Data on Construction Materials in One Volume

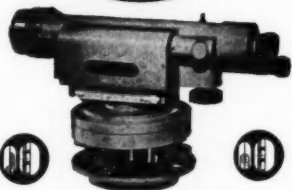
The latest data concerning the sources, manufacture, and fabrication of the principal materials of construction is presented in a new book, "Materials of Construction," published by John Wiley & Sons, Inc., New York, N. Y. M. O. Withey, dean emeritus of the College of Engineering, University of Wisconsin, and G. W. Washa, professor of mechanics at Wisconsin, are the authors of the publication.

The properties, testing, defects and variations, and uses of such materials as wood, stone, concrete, steel, iron, and other metals are treated in detail. The mechanics of these materials are discussed. New information on aggregates and cement, particularly with regard to formulas and testing methods, is included. The book is generously illustrated and contains a complete index.

"Materials of Construction" is priced at \$9 and may be ordered from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Surveying experts favor

FENNEL
INSTRUMENTS

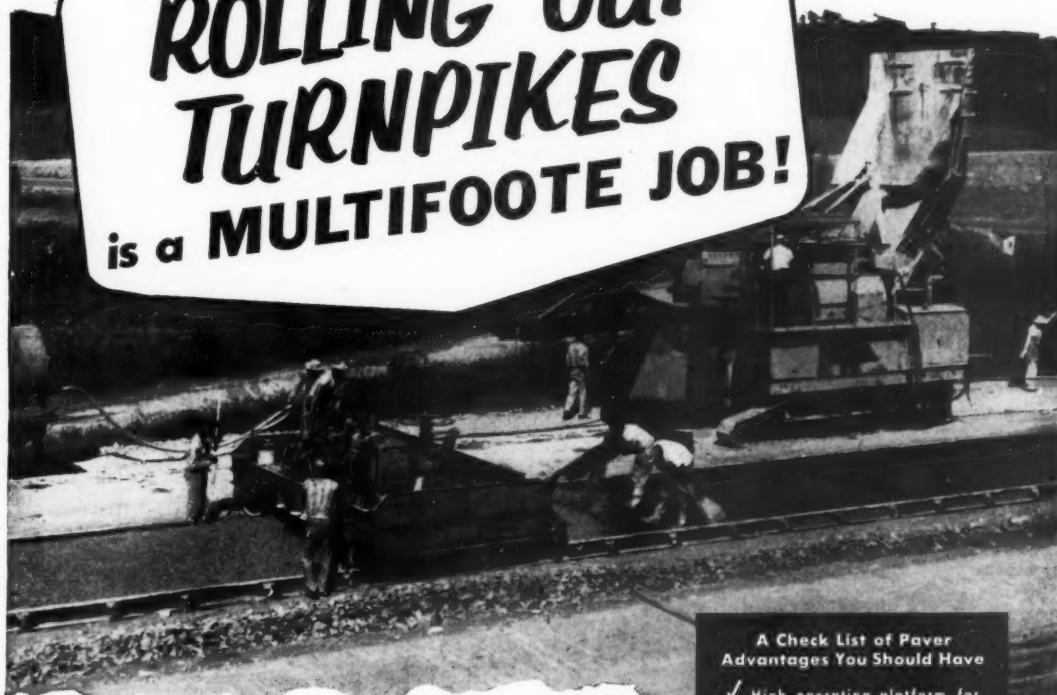


"NITAC" — World's only level with split bubble, erect image. One of many super-fine levels, transits, theodolites, made by Fennel's old-world craftsmen. Performance-proved in 58 countries. Send for particulars, prices.

FENNEL INSTRUMENT CORP. OF AMERICA

DECEMBER, 1954

ROLLING OUT TURNPIKES is a MULTIFOOTE JOB!



THE highly competitive bidding, the many miles of travel, the need for fast output, make ease of operation, crawler endurance, water capacity, simplicity of maintenance and other paver advantages important on Turnpike work. MultiFoote Pavers have proved their ability to roll out Turnpikes.

MultiFoote shovel type crawlers with their self-cleaning action stand up under miles of travel. Large, extra tank capacity reduces water delays. Simplicity of design makes upkeep easy and cuts "down" time and many other advantages assure fast output.

These are just a few of the reasons why there are more MultiFoote Pavers sold each year than any other make and why there are more MultiFoote Pavers in service than any other make. MultiFoote advantages have established records for output and mileage laid down on extensions of the Pennsylvania Turnpike.

If you are bidding on Turnpike Work you need the proved dependability of the MultiFoote. Ask for details on MultiFoote advantages.

A Check List of Paver Advantages You Should Have

- ✓ High operating platform for faster, safer operation
- ✓ Plenty of water capacity
- ✓ No pressure water tank — unaffected by line pressure or grade
- ✓ Rotary power discharge — faster in cleaning the drum
- ✓ Double Cone Drum with scouring action — easier to keep clean — less tendency to "build up"
- ✓ Wide skip — easy for trucks — easy to re-reeve — takes less cable
- ✓ Shovel-type crawlers and side frames
- ✓ Highlift Boom, easily installed for off-highway work
- ✓ Other advantages for easier upkeep, faster output and easier operation

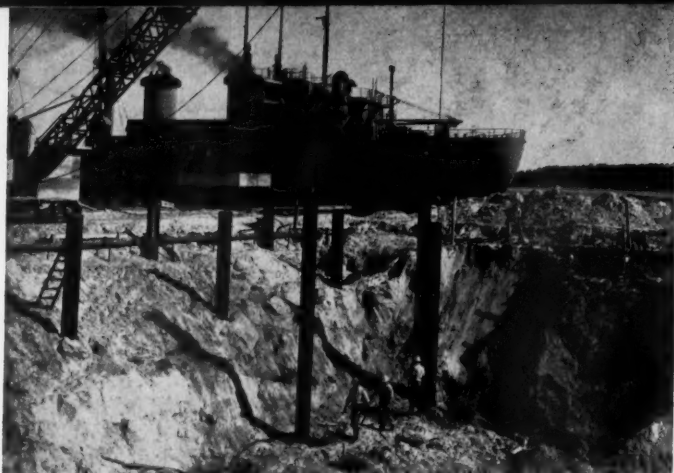
**BLAW-KNOX
COMPANY**
FOOTE CONSTRUCTION
EQUIPMENT DIVISION

1916 State Street
Nunda, New York

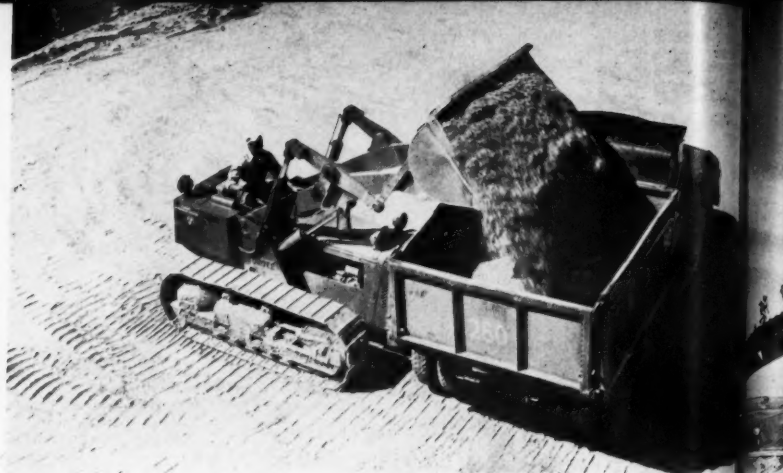


MULTIFOOTE
CONCRETE PAVER

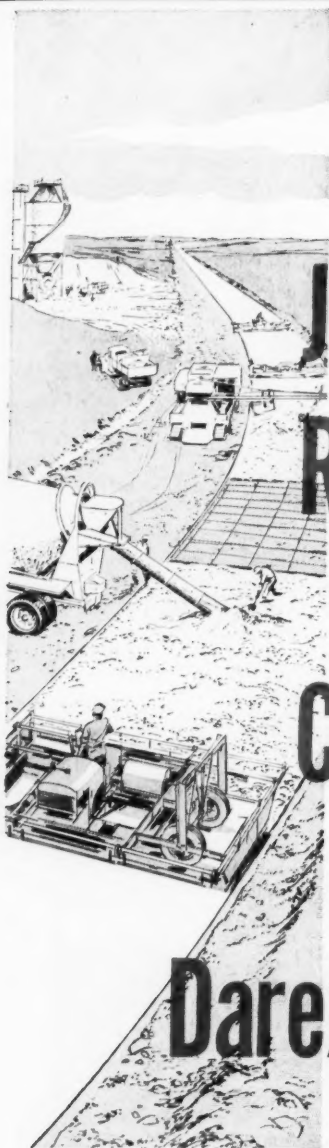
FOR EVERY PLACE CONCRETE MUST BE POURED



More Power—With the 20-foot-deep excavation in the dry, work is ready to proceed on the new municipal power plant in Jacksonville, Fla. George D. Auchter Co., Jacksonville, with a single-stage Griffin Wellpoint system, dewatered the site without any kind of sheeting.



Street Improvement—This International TD-9 crawler equipped with a Drott Skid-Shovel handles 900 cubic yards of gravel daily as it works on the Jackson Street improvement project in La Crosse, Wis. International trucks are filled by the front-end loader with three shovelfuls of material.



For roads
that last, use

Job-Mix or
Ready-Mix
air-entrained

Concrete
made with

Darex AEA

DAREX AEA helps you maintain your designed yield, helps you meet specifications. It is the world's most widely used brand of air entraining agent. Not a by-product, it is specifically formulated to give you close control of air content. Concrete made with Darex AEA places easier, finishes faster and better, has finer surface texture, is more durable.



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DARASEAL concrete curing compound • DARACONE masonry water repellent • DARALITE for lightweight aggregate

Firms Are Chosen to Handle State Toll-Road Bonds

Two investment banking firms with wide experience in toll-road financing have been selected to co-manage financing of the Illinois toll-highway system, which will necessitate a bond issue of more than \$500 million. The firms are Glore, Forgan & Co. and Halsey Stuart & Co., Inc., both of Chicago.

The Illinois toll-highway system will include a route skirting Chicago from the Indiana border to the Wisconsin line, a route in a northwesterly direction to Wisconsin via Rockford, an east-west route toward the cities of Rock Island and Moline, and a thruway connecting East St. Louis with Indiana near Terre Haute.

Glore, Forgan & Co. and Halsey Stuart & Co., Inc., have participated in the toll road bond issues of such states as Pennsylvania, New Jersey, Massachusetts, Connecticut, Ohio, Indiana, New York, and Kansas.

In addition, Glore, Forgan & Co. has been designated underwriting manager for the proposed Texas Turnpike Company's Dallas-Fort Worth-Houston toll road.

Financing of the Illinois toll roads is expected to be made shortly after the feasibility report on the system is submitted. To date, both firms have received applications from more than 500 investment banking houses for a share in marketing the bonds.

New Thruway Stretch Opens, Doubling Road's Length

The 183-mile section of the New York State Thruway from Westmoreland to Newburgh was opened little more than a month ago, doubling the stretch of cross-state expressway now open to toll traffic.

The 366-mile section of thruway

now in use exceeds the length of the Pennsylvania Turnpike and is more than three times as long as the New Jersey Turnpike. The remainder of the 427-mile road linking Buffalo and New York City is scheduled for completion in 1955.



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PECKERWOOD STEEL WIRE DRAGS

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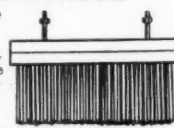
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January 3-31



Plant Conveyor—Two P&H cranes lift a reinforced-concrete member into place on the 1 1/2-mile gantry which will carry coal from a mine to a gasoline-from-coal synthesis plant being built in South Africa. The gantry was designed and constructed by Concrete Development Corp., Ltd., Johannesburg, South Africa.



Groundwork for Air Fleet—A Caterpillar No. 12 motor grader works on the \$3,500,000 expansion job at Lincoln Air Force Base, Lincoln, Nebr., a job involving 100,000 yards of fill material and 2,200,000 yards of excavation. The work will give the facility two more miles of runway, warm-up aprons, and a mile-long taxiway.

Report on Toll Roads Is Under Study in Illinois

With plans covering the construction cost, design, traffic load, and income of the proposed Illinois toll-road system complete, officials and members studying the report are optimistic concerning the chances for the proposed roads.

Engineering plans for the system were made by Joseph K. Knoerle & Associates, Inc.; Wilber Smith & Associates; and Parsons, Brinckerhoff, Hall & Macdonald, Inc.

The toll roads consist of a route bypassing Chicago and running from the Indiana state line to the Wisconsin state line. A spur into Wisconsin

via Rockford, an east-west spur toward Rock Island and Moline, and a thruway connecting East St. Louis with Indiana in the vicinity of Terre Haute complete the system. The latter section would carry transcontinental traffic across the southern part of the state.

It is estimated that about \$30 million would be needed annually to maintain and operate the 485 miles of road and to repay bond holders. Preliminary revenue studies indicate that \$39 million should be collected in 1958 tolls on the proposed toll system.

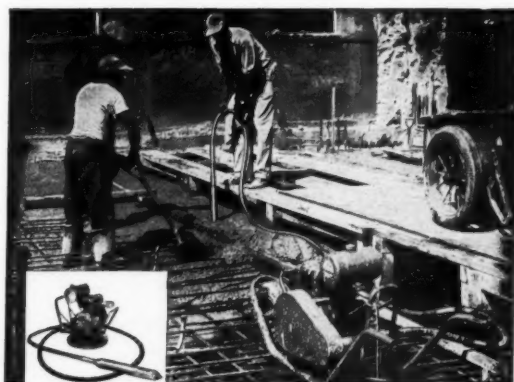
Rubber-Road Construction Is Detailed in New Film

The latest work in rubber-road construction, both in this country and abroad, is shown in the film "Stretching Highway Dollars With Rubber Roads," a completely remade version of an earlier film with the same title.

The 16mm sound film starts with a report on rubber roads by a leading highway engineer, shows how rubber-

asphalt is mixed, and then turns to the construction of an actual road. Scenes in the laboratory of the Natural Rubber Bureau are included.

The 42-minute movie is available for booking without charge and can be obtained by writing the Natural Rubber Bureau, 1631 K St. N. W., Washington 6, D. C.



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Indiana

DECEMBER, 1954

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Worthington Blue Brute compressor, operating tie tampers on track maintenance. Power—Continental Red Seal Y91.

Continental Red Seal power for specialized applications is now available at levels ranging from 2 h.p. up to more than 1,000, in liquid-cooled and air-cooled models, for use on all standard fuels. And, strictly on the score of PERFORMANCE—economy, dependability and low maintenance cost—it is finding its way into more and more leading makes of specialized machines. The equipment builder's good name, and the end-user's satisfaction, are double-clinched by this fact: EVERY CONTINENTAL RED SEAL IS NOT ONLY BUILT FOR ITS JOB, BUT BACKED BY PARTS AND SERVICE FACILITIES COAST TO COAST.

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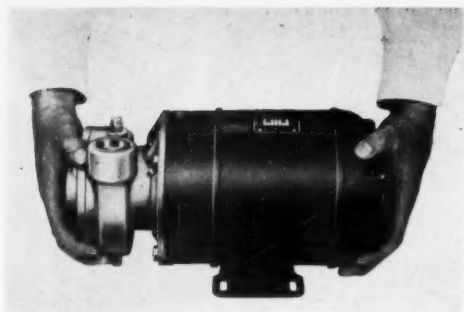
A COMPLETE LINE OF 4-CYCLE AIR-COOLED ENGINES

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Continental Motors Corporation
MUSKEGON, MICHIGAN



Byron Jackson's new Type LL Bilton pump features a mechanical seal as standard equipment.

Close-Coupled Pump Has Mechanical Seal

■ The new Type LL Bilton pump, an addition to the Byron Jackson close-coupled pump line, features a mechanical seal as standard equipment. The new BJ seal replaces the conventional packing and eliminates the re-packing problem. It controls leak-

age to guard against contamination of pumped liquids, and protects against volatile liquid hazards.

The new pump is of the single-stage single-suction type with an enclosed impeller, and requires no rigid foundation or base. It delivers up to 80 gallons per minute at a 75-foot head and handles up to 150-foot heads at lower capacities. Temperatures to 150 degrees F and suction pressure to 75 psi can be handled.

Motors for the pumps are available in single-phase, three-phase, explosion-proof, and direct-current types.

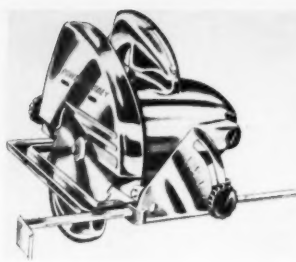
For further information write to the Byron Jackson Co., P. O. Box 2017, Terminal Annex, Los Angeles 54, Calif., or use the Request Card at page 18. Circle No. 816.

Folder on Chain Drives

■ A new folder describing installation and maintenance procedures for Morse Hy-Vo heavy-duty chain drives for 50 to 5,000-hp drive applications is now available from Morse Chain Co., 7601 Central Ave., Detroit 10, Mich.

The folder has complete line drawings and descriptive material covering sprocket installation, chain assembly, chain cases, lubrication, chain disassembly, and maintenance procedures. Disassembly procedures are described in detail.

To obtain Folder 72-54 write to the company, or use the Request Card at page 18. Circle No. 817.



Improved Power Saw

■ The 7-inch Powerguide saw made by Ram Tool Corp., 411 N. Claremont Ave., Chicago 12, Ill., is now offered with two improvements, the manufacturer announces. These changes are ball-bearing motor operation and the addition of a spring-operated positive safety guard.

The Powerguide Model PG-7 has a 1-hp ac-dc motor. It makes a bevel cut of 1 1/8 inches at 45 degrees. Depth of cut is 2 1/8 inches. The unit weighs 11 1/2 pounds.

For further information write to the company, or use the Request Card at page 18. Circle No. 770.

Data on Timber Connectors And Framing Anchors

■ Production of Timberlock split-ring timber connectors and framing anchors has been taken over by the Marsh Co. Division of the F. D. Kees Mfg. Co., Beatrice, Nebr. The splitting connectors, illustrated in a new catalog from the company, are now being made of clean hot-rolled pickled steel, and are free from scale. They are available in 2 1/2 and 4-inch-inside-diameter sizes, and come coated with a light film of oil to prevent corrosion.

The framing anchors are made of 18-gage zinc-coated steel. They are 4 3/4 inches high and measure 9/16 inch at the top and 1 1/8 inch at the bottom. They have four nailing faces.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 818.

Fibre Forming Tubes For Columns, Piers

■ Using fibre concrete forms for making round columns offers certain advantages over other forming methods, according to a folder from Sonoco Products Co., Hartsville, S. C. The Sonotube forms are intended for one-time use and are offered in two types, one that is stripped when the concrete has hardened and one that is left on the column permanently. Because these forms are light, they can be set in place rather easily and need little bracing.

The forms are offered in 31 sizes with 1 to 36-inch inner diameters. Lengths are up to 24 feet, with longer forms available on order.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 809.

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4-WHEEL DRIVE

has them ALL
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FASTEST RIG you've ever seen, on the job or between jobs. Travels streets and highways without permits or loading, rolls over curbs without damage.

EXTRA POWERFUL through reduced number of moving parts, less friction—38.6 h.p. at the drawbar.

ECONOMICAL in every way—fewer parts to repair or replace and all parts standard, quickly available through International distributors throughout the world.

CUSHIONING EFFECT of rubber tires makes the whole machine last longer, lessens operator fatigue. You'll see more work turned out every day!

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One man with a torch can remove a small wheel, gear, pulley or bearing—even throw away the pieces—in perhaps an hour.

THIS OTC HYDRAULIC IS AN OTC PULLING TOOL

One man in minutes, with little effort, can remove, repair and install the same parts without damage to parts or tools. OTC Hydraulic Pullers are available in 17 1/2, 30, 50 and 100 Ton sizes—may be used as detachable units or on OTC presses. Use them to push, pull, bend or spread . . . to pull and install bearings, sleeves, outer races, gears, pulleys, sheaves, shafts, wheels—anything that can be pulled.

Your OTC Grip-O-Matic puller can be converted to Hydraulic power with this Power Twin Ram and adapters.

OTC Grip-O-Matic Puller and Hydraulic Ram pulling fly wheel.

OTC 17 1/2 Ton Ram on portable press for shop use.

OTC 100 Ton unit with hoist frame pulling diesel locomotive axle journal bearing.

Removing Industrial Tractor sprocket with 50 Ton OTC Hydraulic Puller.

FOR COMPLETE INFORMATION SEE YOUR JOBBER OR WRITE US.

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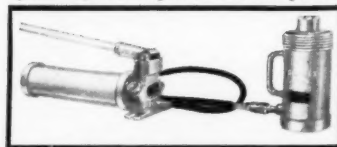
WRITE FOR FREE BOOKLET



Cables in concrete "I" beam are stressed to pre-determined tension by 60-ton Simplex "Jenny" Hydraulic Puller equipped with pressure indicating gauge.

Hydraulic Puller Prestresses Concrete Faster, Safer, Easier

"Center-Hole" pulling, an exclusive feature in Simplex Pullers, has simplified prestressing jobs, according to concrete construction men. The "Center-Hole" construction of the Puller, they explain, permits tensioning cables or rods to be drawn through the center of the tubular ram. This eliminates torque, dangerous off-center pressures and complicated back-up devices—actually makes pulling 75% easier. The Simplex "Jenny," illustrated above, is a self-contained unit which serves as its own back-up or can be used with a simple chair, reducing set-up time. Simplex "Center-Hole" Pullers are available in capacities from 30 to 100-tons and in self-contained or remote controlled units. They may also be used as powerful hydraulic jacks and presses as well as pullers.



SIMPLEX "RE-MO-TROL"—Remote-Controlled Unit has ram connected to hydraulic pump by high pressure hose for safe, convenient use in tight spots and dangerous locations. A pressure gauge may be installed for checking tensioning pressure.

FREE BULLETIN SHOWS HOW
Illustrates application of all models of Simplex Hydraulic "Jenny" and "Re-Mo-Trol" Pullers for prestressing concrete and for other construction uses. Write for copy of Hydraulic 53.



WORLD'S LARGEST MANUFACTURERS OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS
SIMPLEX JACKS
RE-MO-TROL UTIL-A-TOOL JENNY 80L-100
TEMPLETON, KENLY & CO. 2511 Gardner Road, Broadview, Illinois
CONTRACTORS AND ENGINEERS



The Porta-Fold unit shown as a straight ladder and when used as a scaffold.

Convertible Ladder Takes Various Shapes

■ One unit that converts into an A-frame stepladder, a straight ladder, or a scaffold is offered by Porta-Fold Co., 525 N. Alvarado St., Los Angeles 26, Calif. The Porta-Fold ladder is made of $\frac{1}{8}$ -inch aluminum channel and has hardwood rungs and rung supports. The ladder sections are joined with cadmium-plated steel hinges, and cross braces are of aluminum angle.

The unit is about 7 feet in height as an A-frame ladder, and about 14 feet 10 inches as a straight ladder. Converted into an 8-foot scaffold it is 3 feet 6 inches high. Folded for travel, the ladder is $9\frac{1}{2} \times 15 \times 44$ inches.

Safety base feet are standard, and a stabilizer attachment is offered optionally.

For further information write to the company, or use the Request Card at page 18. Circle No. 808.

Air-Actuated Clutch for Construction Machinery

■ The Twin Disc Model PO air-actuated clutch for cranes and shovels, hoists, and other construction machinery is covered in a folder available on request. Features of the clutch, as pointed out in this literature, include: extra-high torque capacity, light weight that reduces inertia mass, and a narrow over-all width for more compact installation.

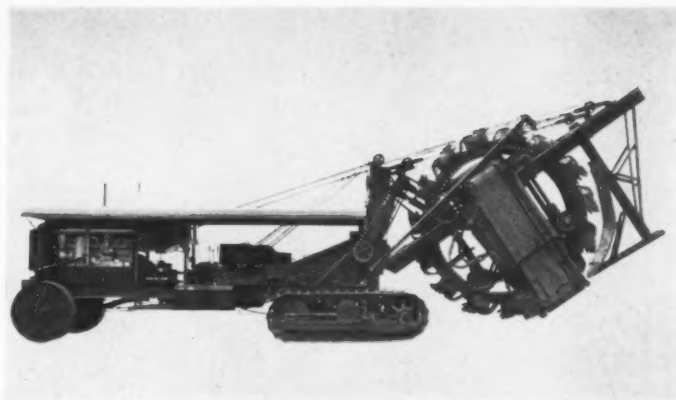
Sizes of 14 through 36 inches with torque capacities to 120,000 pound-feet are offered.

To obtain Bulletin No. 304 write to The Twin Disc Clutch Co., Racine, Wis., or use the Request Card at page 18. Circle No. 819.

How to Handle Wire Rope

■ Handling wire rope correctly is an important factor determining the ultimate cost of this material to the contractor. A booklet giving detailed directions on the handling and storage of wire rope is available from the Union Wire Rope Corp., 21st St. and Manchester Ave., Kansas City 26, Mo. Sections cover setting up the reel for rewinding, handling coils to be re-wound, putting a seizing on wire rope, and fastening the end of the rope to the reel.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 752.



GIANT AMONG PIPELINE DITCHERS is the Big Incher manufactured by Crutcher-Rolfs-Cummings, Inc., 7825 Katy Road, Houston, Texas. The machine makes cuts 32 to 52 inches wide to a depth of 9 feet 6 inches. Power comes from a 110-hp Caterpillar D-13000 diesel engine, and crawlers are 24-inch-wide Caterpillar D7 tracks. The complete machine weighs about 74,000 pounds. For further information write to the company, or use the Request Card at page 18. Circle No. 737.

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U.S. Matchless Wire Braid Air Hose



- * tube of high quality neoprene is completely resistant to line oil
- * special steel wire braid gives tremendous strength, permanent bonding assured by heavy gauge rubber layer
- * additional layer of rubber under specially coated rayon breaker protects wire against corrosion should cover be cut or damaged
- * cover of carefully selected, tough brown natural rubber fights off injury from rocks, tools, and heavy equipment



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Ripping In Tight Quarters—Equipped with an Ateco rock ripper, this Caterpillar D6 tractor maneuvers back and forth to rip up portions of Route 19 in Pittsburgh without making full turns. The Ateco ripper attaches directly to the tractor, rather than being drawn. For details circle 779 on card at page 18, or write to Greenville Steel Car Co., Greenville, Pa., licensed manufacturer of the ripper.



Mobile Tree Saw—This R. G. LeTourneau mobile saw fells a large tree with its 6-foot blade and its "stinger" boom. Twelve electric motors located at the points of application drive the wheels, steering mechanism, and saw. Power comes from an ac generator driven by a GM Series 71 diesel engine. For details circle 776 on card at page 18, or write to R. G. LeTourneau, Inc., Longview, Texas.



K-45 performance report

"One Kompactor is doing the work of 2 crawlers and 4 tamping rollers"

says TOM LANE, Superintendent, Huron Contracting Co., Holland, Ohio

Tom Lane is working two Buffalo-Springfield K-45 Kompactors on the Huron Contracting Co.'s 8 mile section of the new Ohio Turnpike. The job calls for 2½ million yards of grade material . . . compaction specifications call for between 98 and 102 per cent.

"With our new Kompactors these requirements are being met with unusual speed and ease. On our job one of the K-45's is doing the work of 2 crawlers with 2 tamping rollers each in tandem," reports Lane. He also states, "Because the K-45 is so maneuverable there has been absolutely no hand tamping time on this project. It can really work in close to abutments and culverts."

Another important time saver that Lane reports on is, "The K-45 leaves a relatively smooth finished surface

after compacting, and if we're caught by an evening shower we don't have to go back and do the job over again the next day."

Since introduction the Kompactor has been setting performance records. The "Interrupted Pressure Principle" design of the rolls on the K-45 allows all compaction effort to be downward . . . results in greater, more uniform density from lower elevation to

top surface. The rolls are unique segmented "islands" of heavy steel pads placed in staggered positions around the rolls . . . enter loose material with minimum forward or horizontal displacement.

For better, lower cost compacting get the facts on the revolutionary Buffalo-Springfield K-45 Kompactor. See your nearest distributor or write for complete information today!

BUFFALO

ROLLER COMPANY

THE LEADER IN COMPACTION EQUIPMENT DESIGN AND MANUFACTURE



SPRINGFIELD

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P. S. . . In every industry the products of one manufacturer stand out as "The Standard of Comparison" because of certain built-in qualities of excellence. Thus it is, and has been for over 65 years, with Buffalo-Springfield compaction equipment. Contact your nearest Buffalo-Springfield distributor today for additional information on the complete Buffalo-Springfield line.

Pamphlet Lists Features Of Truck-Mounted Crane

■ According to a new pamphlet from the manufacturer, 38.6 per cent of all Bucyrus-Erie Hydrocranes sold are repeat orders. The literature lists a number of practical features found in these truck-mounted units as reasons for this fact. These include precision hydraulic control, telescoping boom, hydraulically set outriggers, and fast job-to-job travel.

The booklet also points out that in the new self-powered Hydrocrane recently developed, power has been increased from 23 to 38 hp and line speed has been boosted from 130 to 190 feet per minute.

Another advantage cited is versatility. With a wrist-action dipper available, the basic Hydrocrane mechanism converts to a hoe-type excavator, which the manufacturer markets as the Hydrohoe.

To obtain this pamphlet, S-30-H, write to the Bucyrus-Erie Co., Box 56, South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 821.

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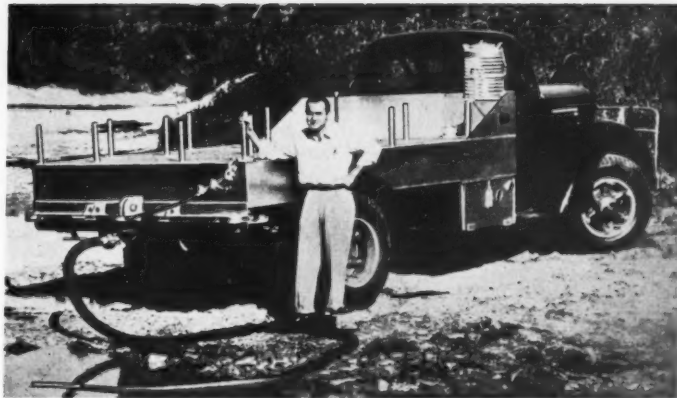
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CONTRACTORS AND ENGINEERS



Power-Takeoff-Driven Mixer—The Hercules Willard Hydro-mixer, available in 4½ to 5½ and 6 to 7¼-cubic-yard sizes, operates through a truck-engine power takeoff. With the mixer engine eliminated, the unit is shorter and weighs less than standard machines. For details circle 782 on card at page 18, or write to Willard Concrete Machinery Sales Co., P. O. Box 477, Galion, Ohio.



Water Truck For Drilling—This new Model FT-50 flat-top water truck is available as a companion unit for Davey rotary air drills and mud drills. The steel tank, which also serves as the truck bed, comes in 650 to 1,000-gallon capacities. Suction from the manifold draws water into the tank. For details circle 777 on card at page 18, or write to Davey Compressor Co., N. Water St., Kent, Ohio.

New Text Discusses Analysis of Structures

The principles and techniques of using scale models in analyzing engineering structures with linear load-deflection characteristics are discussed in a new book, "Model Analysis of Structures," by T. M. Charlton.

The methods of model analysis considered have been selected for their ease, speed, and accuracy in a design room. Written for the use of practicing engineers, teachers, and advanced engineering students, the book contains much information from the author's experience in testing models under office conditions. Particular attention is paid to the principles of similarity governing the design of models and by which results of tests are interpreted for the actual structures.

The theory of the indirect method for statically determinate and linear indeterminate structures is also discussed.

Priced at \$5.00, the book is available from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Yours for the Asking

Further information or descriptive literature can be secured from any advertisers in this issue of **CONTRACTORS AND ENGINEERS**. Just write name of manufacturer and product of interest to you on the extra line provided on the post card facing page 18, fill in your own name and industry connection, mail to us and we'll do the rest.

CONTRACTORS AND ENGINEERS

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For easy loading and also for load stability, stub axles are mounted on walking beams.



Moving a bulldozer and crane from one small job to another calls for speed and efficient loading—and Rutledge Concrete Company of Richmond finds this Dorsey MTS meets these requirements at least two or three times a day. This trailer carries the machinery to speed the routine of installing septic tanks throughout a wide area served by Rutledge.

"WE CAN'T AFFORD TO WASTE TIME moving equipment from one job to another—and we find the highly maneuverable Dorsey MTS fits this situation perfectly. Even loaded to capacity it's easy to handle on the highway or in tight places."—says L. H. Newcomb, General Manager, Rutledge Concrete Products Company, Richmond, Va.

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Oil Field Floats



Tilt-to-Load



Model "MK"



Model "MT"

Capacities up to 75,000 pounds. Loads easily, travels swiftly.

Easy to load and to handle. For fast, economical service.

10 or 15 ton capacities. Level or drop decks. Semi or full trailers.

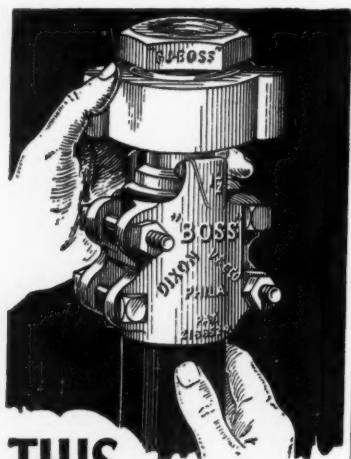
35 to 75 ton capacities, with up to 100 tons on special order.



Grid-Type Compactor—The Hyster grid roller used for salvaging asphaltic pavement crushes and compacts simultaneously. It now has a cleaning blade which removes any wet material that may enter the roller. Gross weight of the grid roller and frame, including ballast and cleaner, is 30,000 pounds. For details circle 778 on card at page 18, or write to Hyster Co., 2902 Clackmas St., Portland 8, Oregon.



Rotary Compressors—Portable Chicago Pneumatic Power Vane compressors, available in four sizes, feature tapered roller bearings and fitted step-construction for better alignment of running parts. Pressure-matic drive transmits full engine power and absorbs shock. For details circle 780 on card at page 18, or write to Chicago Pneumatic, 6 E. 44th St., New York 17, N. Y.



THIS Washerless COUPLING

has no equal for efficiency, durability and safety in every high or low pressure hose service . . . steam, water, gas, air, oil, hydraulic. Ground joint union between stem and spud provides leakproof, trouble-free seal. Furnished with super-strong, "Boss" Offset and Interlocking Clamp.

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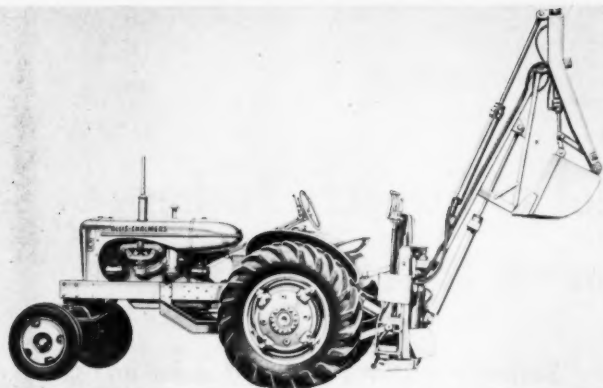


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CONTRACTORS AND ENGINEERS



New Tractor-Mounted Backhoe—Allis-Chalmers now offers the new 40-drawbar-hp Model WD-45 wheel tractor with the Henry backhoe. Bucket sizes are 14 to 24 inches. Other Henry hydraulic attachments include a backfill blade, straight and angle dozers, and a 1/3-cubic-yard front-end loader. For details circle 781 on card at page 18, or write to Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.



Longer Reach For Loader—The Eagle truck-mounted windrow loader is now available with a 15-foot conveyor that is raised or lowered hydraulically. Material can now be discharged onto a truck more accurately than before, especially in cases where the truck travels ahead of the loader. For details circle 774 on card at page 18, or write to Eagle Crusher Co., 900 Harding Way, Galion, Ohio.

Two New Base Stations For Mobile Radio Systems

■ Two new complete base stations for users of mobile radio systems have been announced by the Mobile Communications Department of Allen B. Du Mont Laboratories, Inc., 1500 Main Ave., Clifton, N. J. The units, one designed for the 25 to 54 megacycle band and the other for the 450 to 470 megacycle band, are for use with two of Du Mont's three mobile receiver-transmitter systems introduced earlier this year, as well as with other makes of mobile equipment.

Both new base stations incorporate the transmitter, receiver, termination panel, and power supply in single metal desk-mounting cabinets with front and rear doors for accessibility.

For further information write to the company, or use the Request Card at page 18. Circle No. 721.

Rubber Coatings Protect Equipment From Abrasion

■ Rubber coatings and linings used to protect equipment from corrosion and abrasion are described in a catalog available on request. The Magic Vulc coatings described in the booklet are made by Magic Chemical Co., Dept. N, 130 Crescent St., Brockton 2, Mass.

This company has developed improved anti-corrosion rubber coatings, as well as rubber linings that reduce abrasive wear on equipment. The first product it introduced for the latter purpose was Magic-Vulc Plastic Rubber. Now the company offers Magic-Vulc Iron-Rubber, an improved abrasion-resistant rubber lining.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 820.

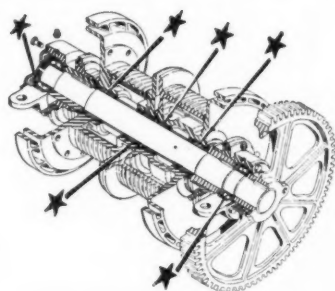
PRESSURE VESSELS

Suitable air receivers—gas absorbers fractionators—hydraulic accumulators, etc. 12-10' ID dia. x 40' long x 2 1/2" to 3" shell. Heads 3 1/2" to 3". WP 600 and 500 psi.

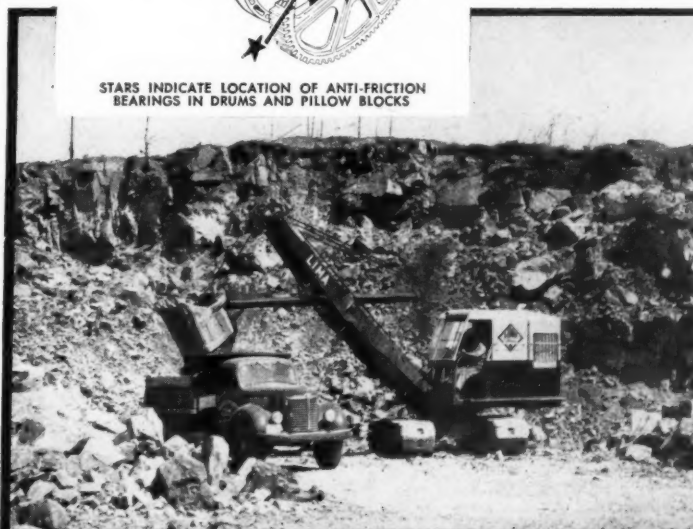
6-8' ID dia. x 40' x 2" to 2 1/2" shell. Head 2 1/2". WP 500 psi.

All used, excellent condition, code welded construction, manufactured by A. O. Smith. Priced low for prompt shipment East Chicago, Indiana. Prints, prices available upon request.

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LIMA Type 34, equipped with 3/4 yd. dipper, 18' boom, 17' dipper handle.

LIMA'S

shafts and drums roll
on anti-friction bearings

As a result of twenty-five years' experience with anti-friction bearings, Lima design engineers know exactly where to put them to give you maximum benefits. This cut away view shows how Lima utilizes anti-friction bearings in the drums. X-ray vision would show you how Lima uses them throughout the main machinery on all shafts and other important parts.

This modern means of eliminating destructive friction benefits LIMA owners through faster operating speeds and lower upkeep. Anti-friction bearings also maintain perfect shaft alignment and insure smoother, easier clutch action.

COMPARE! No other machine gives you as much as LIMA!

1. Bronze bushings in tread, idler and drive rollers are protected by piston-type dirt seal rings and retainers.
2. All gears, smaller parts and shafts which are subject to extra wear are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation to eliminate excess counterweight.
4. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
5. Big capacity drums and sheaves lengthen cable life by reducing the need for double wrapping and sharp bends in cable.

6. Propel and swing gears and power take-off are enclosed in a sealed oil bath for dirt elimination and smoother, quieter operation.
7. Torque converter (optional) automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster.
8. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels (3/4 yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

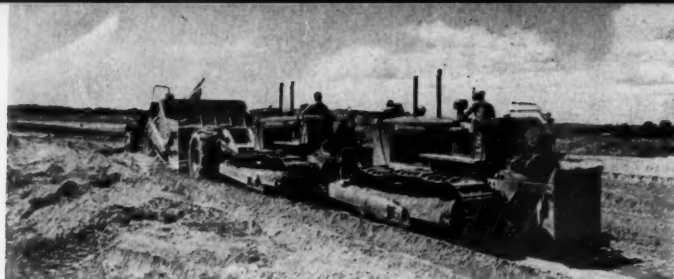
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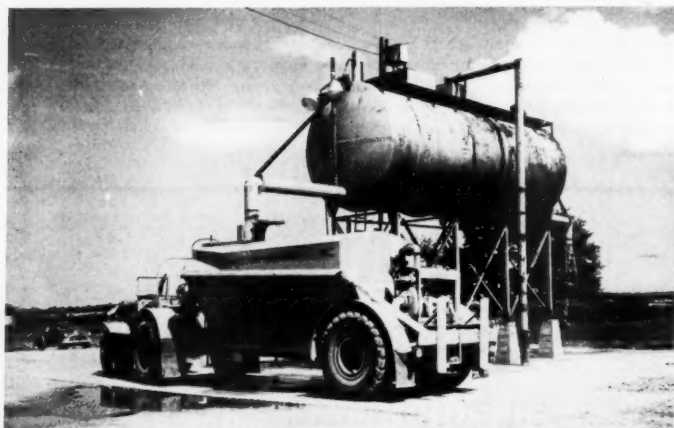
BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

Construction Equipment Division



Two International TD-24's push-load a big Euclid scraper through soft cut material. Both tractors are equipped with bumper plates at front and rear, so that either can lead the pushing train.

C&E Staff Photos



A water wagon made from a converted "Euclid" bottom-dump refills from a 16,000-gallon converted gasoline tank which Morrison-Knudsen erected on steel bents. The 16-inch outlets at either end of the tank enable wagons to refill in 45 seconds.

Fleet of Scrapers Pushes Grading at New Jet Base

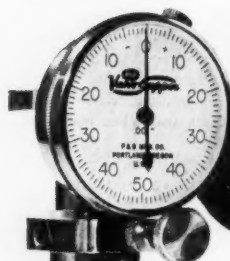
Contractor augments equipment spread with special rigs to lick problems of compaction on huge earthmoving job

AN EARTHMOVING JOB involving 4,500,000 cubic yards of excavation is a mammoth project in any man's language. To a contractor, it means a task calling for the right kind of heavy equipment and lots of it—especially when the job requires speed as well as compliance with rigid compaction specifications.

When Morrison-Knudsen Co., Inc., Boise, Idaho, and Landers & Griffin Co., Portsmouth, N. H., were awarded the grading and paving contract for a new \$46 million jet-bomber base at Portsmouth earlier this year, they lined up a big spread of earthmoving equipment to keep costs under their

bid of \$.266 per cubic yard. The backbone of this spread is a fleet of 14 king-size Euclid scrapers, for this grading job is largely a scraper operation.

Planned as a base of operations for the B-47 Stratojet, a medium jet bomber, the huge airfield is being constructed for the Strategic Air Command of the U. S. Air Force. As with other Air Force construction jobs in this area, the work is under the supervision of the New England Division, U. S. Army Corps of Engineers. M-K and Landers & Griffin have a joint-venture contract for \$9,769,085 covering grading and pav-



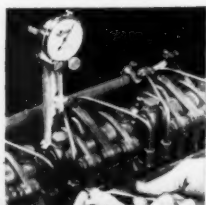
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This new precision instrument utilizes an entirely new principle in adjusting valve clearance, timing injectors and balancing fuel racks.



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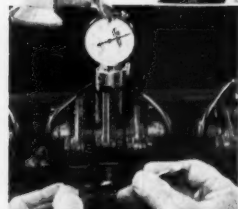
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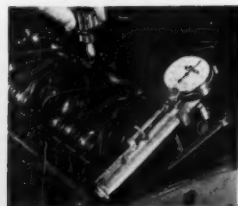
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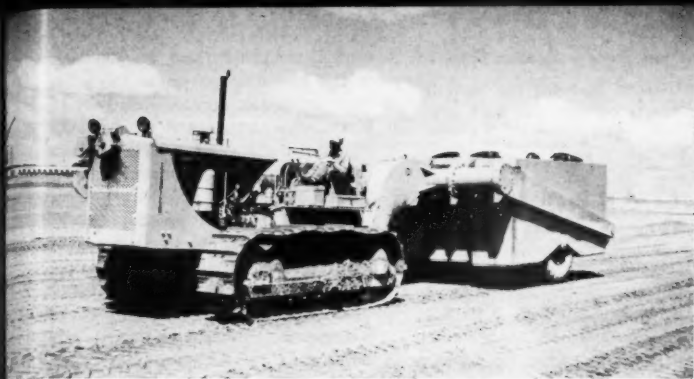


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4210 Sansom Street, Philadelphia 4, Pennsylvania

CONTRACTORS AND ENGINEERS



Fill material in the parking apron area is compacted by this Southwest 50-ton pneumatic-tire roller, pulled by a Cat D8. Compaction specifications range from 100 per cent for upper levels to 90 per cent for subbase levels.

C&E Staff Photos

ing of the 2-mile-long runway, four taxiways, and more than 1½-mile-long parking apron.

No time has been lost in getting the project under way. Since February of this year, more than \$38 million worth of contracts has been issued. Footings and foundations for buildings are in, and streets and roads are being constructed. The major activity at the site, however, is the grading and paving operation.

The major problems in grading are related to compaction, as the silty gravel in the area contains a great deal of fine sand. Extensive tests were carried on early in the project to determine the best process to be followed in achieving specified compaction. The presence of wet clay in some areas posed another problem—that of dewatering before pipe trenches could be dug. The contractor is meeting both problems with the best available machinery, including some ingenious equipment devised especially for the job.

Facilities under construction at this stage of the project include a runway

10,500 feet long and 200 feet wide; four taxiways 900 feet long, 75 feet wide, and spaced 3,500 feet apart; and a parking apron 8,300 feet long and averaging 1,000 feet in width. The runway and taxiways will be bituminous concrete except for 1,000-foot portland-cement concrete strips at each end. The apron will also be portland-cement concrete. Compacted shoulders 200 feet wide will flank the runway, and 200-foot-wide × 750-foot-long blast areas of 2-inch bituminous concrete over 6 inches of compacted gravel will be adjacent to each end.

Large Quantities

Quantities other than the 4,520,000 cubic yards of excavation include 942,000 square yards of 16-inch portland-cement concrete paving, 238,000 square yards of 4-inch bituminous concrete paving, and miles of reinforced-concrete pipe ranging from 12 to 108 inches in diameter. Very little borrow material is required for the grading or gravel base courses. The

(Continued on next page)



Stang wellpoints 21 feet long are jettied into the ground in preparation for dewatering the area around pipe trench. Wellpoints will be connected to the 6-inch header pipe in foreground. The 108-inch concrete-pipe sections in background will be used for the runway drainage system.

DECEMBER, 1954

The HITCH that has won instant APPROVAL



The DAVENPORT-FRINK UNIVERSAL UNDERBODY HITCH

Here is a universal underbody hitch of rugged all-welded steel construction which overcomes previous objections to universal hitches. We offer many new exclusive features we'd like to tell you about. Among them—

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| THREE POINT SUSPENSION | NO THRUST ON FRONT AXLE |
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DAVENPORT BESLER CORP., Davenport, Iowa

Made in Eastern U.S.A. by FRINK SNO-PLOWS INC., 1000 Islands, CLAYTON, N. Y.



NEW 33' SCREED CUTS SET-UP TIME IN HALF

Kept 6 ready-mix trucks busy supplying concrete

Most small contractors still pour floors in small sections, striking off the concrete with a two by four. Then they must wait three or four hours before they can use a rotary trowel to finish the job properly. This often involves overtime payment.

A contractor who saw one of STOW'S large screeds in action asked that they make up a 33' screed for him—with one special feature. He wanted the beam split at the center to make for easier shipment. Tie-rods were used to prevent sag (see photo). No difficulty is encountered in moving the screed because of the efficiency of STOW roller assemblies. Only three men are necessary to operate this screed—one on each end and one in the center with a rope-pull. Use of the long screed elimi-

nated a great deal of form set-up time, since fewer forms were needed. In this operation, a layer of concrete was first placed to about half the height of the forms. The steel reinforcing was put down and more concrete poured—up to the level of the forms. Then the slab was screeded. Where bare spots were left, because the concrete was not quite up to screed level, the screed was simply tilted back on its rollers and rolled back part way for a second pass.

Because of the STOW screed's vibrating action, a stiff, 1" slump mix was used, producing a stronger concrete. And, because the mix was stiff and dry, they were able to put rotary trowels on the floor for an extra-fine finish one hour after screeding.

For complete information on the STOW line of concrete vibrators and screeds, see your STOW Distributor, or write for Bulletin 526, specifying the equipment in which you are interested.



STOW

MANUFACTURING CO.

40 SHEAR STREET

BINGHAMTON, N. Y.



A Browning truck crane unloads wellpoint pipe angles from a flat-bed truck on the Portsmouth Air Base project.

C&E Staff Photo

(Continued from preceding page)

crushed-stone base for the bituminous-concrete runway will be brought in.

The contractor moved onto the job March 8, 1954. Paving of the concrete apron is already under way, though grading of other areas is expected to continue late into 1955. All phases of the project are being speeded with a view to completing the new military installation sometime in 1956.

Compaction to 100 per cent density is required under the bituminous concrete runway to prevent later settling under traffic. Specifically, the job calls for 100 per cent compaction to a depth of 30 inches below the 4-inch bituminous concrete runway and the 2-inch bituminous pavement in one overrun area. Compaction to 95 per

cent is required from the 30-inch to the 54-inch level under these bituminous areas, and to a depth of 48 inches directly beneath the cement-concrete pavement. All fill beneath these levels must be compacted to 90 per cent density.

The first operation on the contractor's agenda involved stripping of 660,000 cubic yards of material, including topsoil, clay, and old bituminous pavement from the runways of the old Portsmouth municipal airport. Most of the topsoil was stockpiled for later use.

M-K brought in 14 new Euclid scrapers rated at 15½ yards capacity for the stripping and subsequent grading operations. The machines were equipped with sideboards to give them a heaped capacity of 23 yards. With hauls up to 4,000 feet and fill material being laid in 12-inch lifts, the scrapers average about 80 cubic yards per hour.

Three Wooldridge scrapers are also being used on the job, as well as ten Caterpillar D8 bulldozers and four Cat No. 12 graders. Three pairs of International TD-24 tractors equipped with bumper plates at front and rear are used to push-load the big scrapers.

Push-Loading

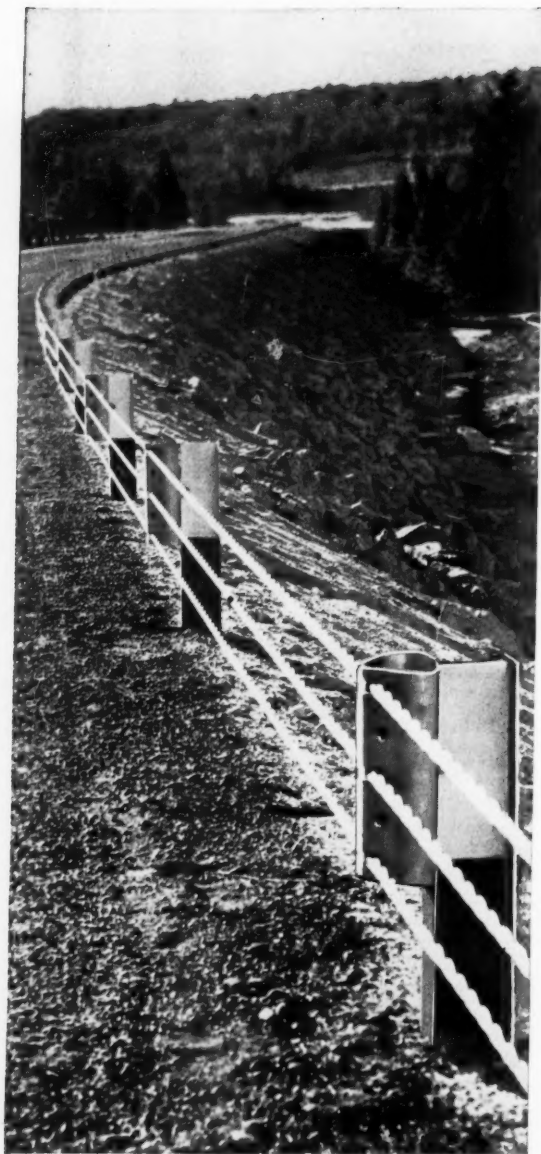
As a scraper starts through the soft material in a cut area, one tractor gets behind and pushes. As the scraper's box fills up and the pushing gets more difficult, the second tractor lines up behind the first and provides the needed extra push. Once the loaded scraper emerges from the soft material and begins to roll under its own power, the second tractor cuts out and backs up to where another scraper is waiting to be loaded. Now he begins the pushing operation, with the lead tractor in the first operation bringing up the rear in time to lend the extra push.

The push-loading is a continual operation, and there are always one or more scrapers waiting to be loaded. A scraper can be loaded in less than one minute from the time the first tractor begins pushing.

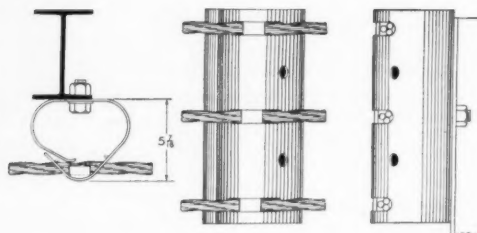
Water for compaction is furnished by four 4,500-gallon wagons fabricated by Morrison-Knudsen. Two are converted Euclid bottom-dump trucks equipped with Jaeger pumps and pulled by Euclid four-wheel rubber-tire tractors. The other two were made by mounting water tanks on trucks. Deflectors are used to spray the water over a 25-foot area. In heavy sand, the water wagons are pulled by TD-18's.

Because so much water is required for compaction, the contractor decided to erect a water-storage tank to replace the usual pump setup for filling tank trucks. A converted 16,000-gallon gasoline tank was set

BETHLEHEM CABLE GUARD RAIL gives that extra margin of safety



You can be sure of dependable protection for motorists when you install Bethlehem Cable Guard Rail at danger points along highways. Used at turns, embankments, bridge approaches and other hazardous locations, Bethlehem Cable Guard Rail forms a strong barrier, with high resiliency and impact-absorbing qualities.



This wire cable guard, with its special bumper-type bracket, is of simple design, easy to install, and of low initial cost. It requires little maintenance, is adaptable for use with steel, wood or concrete posts, and is furnished to comply with any state regulations. Bethlehem Cable Guard Rail can be provided with 2, 3 or 4 cables, with 1, 1¼ or 1½ in. anchor rods.

Bethlehem furnishes cable guard rail, steel posts, brackets, cable ends, anchor rods, cable splicers and fittings, all of which assemble readily and easily on the job. In addition, Bethlehem makes Safety-Beam Guard Rail, a solid beam-type guard rail.

For more information on Bethlehem Guard Rails—and all Bethlehem products for highways—call the nearest Bethlehem sales office, or write to us at Bethlehem, Pa.

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See page 99

CONTRACTORS AND ENGINEERS

on steel bents so that the trucks could drive under it and load. Sixteen-inch overhead outlets at each end of the tank permit two trucks to load at once, and the 4,500-gallon tank wagons can refill in three-fourths of a minute from these outlets. Water is pumped to the storage tank from a nearby brook by two Worthington 3-inch pumps.

Compaction is achieved by two 50-ton pneumatic-tire rollers—a Bros and a Southwest. Samples of compaction can be tested in less than an hour in a soils laboratory erected at the site.

Dewatering

Running transversely across the airfield is a trench for a 108-inch concrete pipe which will carry off about two-thirds of the runway area drainage. This main outfall pipe will lead into an open channel which runs to the bay. Because of the underlying strata of wet clay over most of the area, most pipeline trench area must be dewatered. Three sets of Stang wellpoints are being used. The points are 21 feet long and spaced 4 feet apart along a 6-inch header pipe.

To provide for surface drainage, the runway will slope 1.5 per cent transversely from the center crown; shoulders will slope 2 per cent; and embankment slides will slope 10 per cent. In the paving operation, 16 inches of portland-cement concrete is being laid over an 8-inch gravel subbase in the apron and 1,000-foot runway ends, and 4 inches of bituminous concrete is being placed over a 6-inch crushed-stone base and 8-inch gravel subbase in the taxiways and major portion of the runway.

More than 450 men are on the contractor's payroll, working two 8-hour shifts to speed the project. Night illumination is provided by eight portable light towers. A metal shack, mounted on a four-wheel trailer, houses a 10-kw Kohler light plant generating 115-230 volts. Eight lamps are at the top of a steel tower.

All equipment on the job is lubricated by a grease rig designed by Mark Smith, maintenance superintendent for the contractor. The truck mounts Lincoln oil and transmission lubricating units with hoses reeled at the rear of the body. Chassis and tractor roller grease is mechanically pumped, while the others are dispensed by air supplied by a 50-foot compressor powered by a 7½-kw electric set. A three-man crew working from the rig does most of the oiling and lubricating during the graveyard shift. During these hours the equipment is parked in pools, with all units of one kind lined up together and spaced so that the grease rig can park between two machines and service both at once.

D-A lubricant and Socony-Vacuum products are used. There is also a 3,500-gallon fuel truck to refuel equipment on the job.

Maintenance Shop

The maintenance shop is a 50 × 80-foot prefabricated building with a 20-foot-long section at one end devoted to office space and warehouse. Parts for all rigs being used on the project are stored in the warehouse. In the shop itself, all kinds of equipment and tools are available to overhaul and repair any piece of machinery. Heavier tools or equipment are handled by a portable overhead crane with Wright 4-ton hoist and a Hughes-Keenan Roustabout crane.

Thirty-three mechanics and 16 welders, work three shifts.

The grading and paving contract represents the larger of two contracts

let to M-K and Landers & Griffin for base construction. The joint-venture contractor, under another contract, is also constructing such utilities as roads, railroads, and streets. Under a \$1 million separate contract with the State of New Hampshire, Landers & Griffin and M-K are building a stretch of the Spaulding Turnpike near the base.

Col. R. W. Pearson is division engineer of the New England Division, U. S. Army Corps of Engineers, which is supervising construction of the base. C. J. Murray is in charge of the construction division. Robert S. Johnson is resident engineer on the job. Lt. Col. Andreas A. Andreae is the Eighth Air Force representative. Harold B. Shannon is project manager for Morrison-Knudsen and Landers & Griffin, and Bert L. Perkins is superintendent. THE END



The metal shack at the base of each of these portable light towers houses a 10-kw Kohler light plant.

C&E Staff Photo

Pace-Setting HD-5G Tractor Shovel NOW BETTER 3 WAYS



HD-5G TRACTOR SHOVEL

Rated capacity	1 1/4 cu yd
Belt horsepower	50
Weight, complete	16,200 lb
Dumping height	9 ft, 2 in.

From the time of its introduction seven years ago, the Allis-Chalmers HD-5G Tractor Shovel has been tops in popularity. Many thousands are daily proving their ability and versatility on all kinds of material handling and excavating jobs.

Now, design refinements make the HD-5G a three-way better value than ever before:

1. Has Bigger Rated Capacity

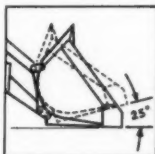
New bucket handles a big 1¼-yd load — streamlined design now helps roll in large loads with less tractor effort. The back of the bucket has been brought forward and the sides extended to cut spillage, put more payload where it's wanted.

2. Helps the Operator Do More

Cleaner dumping with the new bucket saves the operator time and effort shaking out loads.

For added versatility, there is a two-position bucket available with both standard automatic return to digging position and operator-controlled tip-back. If the operator chooses to use the controlled tip-back, he can load the bucket, then tip it back approximately 25° before raising, assuring maximum output under special conditions such as downhill loading or loading loose materials.

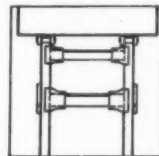
The HD-5G helps the operator do more in other ways, too — giving him full vision, fast and easy control, cleaner platform and more comfortable seat from



which to work, and more working time with truck wheels, support rollers and idlers that need greasing only once every 1,000 hours.

3. Works at Lower Cost

The HD-5G now works at even lower cost than ever before — not just because it *does more*, but because it has features that mean *less maintenance, longer life*. For instance, new type tubular bracing on the bucket booms provides added strength and support, keeps the bucket in line. The floor at the rear of the new bucket has been raised seven degrees to reduce wear on the bottom sheet. Heavy-duty truck wheels and idlers are available for particularly tough working conditions. One-piece, full-length main frame permits unit construction so that major assemblies can be removed without disturbing adjacent units, putting tractor back on the job in hours rather than days.



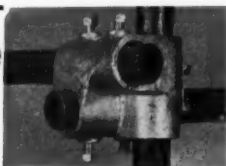
Ten Quick-Change Attachments Add to HD-5G Versatility

Bulldozer	Crane Hook	Tine Fork
Angledozer	Light Material Bucket	Rock Fork
Narrow Bucket	Trench Hoe	— also rear-mounted Ripper
Rock Bucket	Lift Fork	

See your Allis-Chalmers dealer for more about these and other production-boosting features of the popular HD-5G Tractor Shovel.

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**Make
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own**



**Adjustable Scaffolds & Shores
with Amidon Fittings and
one inch pipe.**

Amidon Engineering Co., Elyria 8, O.



A Crenlo reinforced cab is now available for the Caterpillar No. 6 shovel.

Cab for Tractor Shovel

■ A cab for the Caterpillar No. 6 shovel is a recent addition to the line manufactured by Crenlo, Inc., Dept. KP, Rochester, Minn. The width of the new roomy cab extends beyond the hydraulic controls on the right side to provide for easy operation of the shovel. The front extends over the starting engine control, so that all starting operations can be performed by the operator. Two doors allow easy entrance and exit from either side.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 713.

Speed-Reduction Unit For 1/4 to 2-Hp Motors

■ A motor-speed-reduction unit that can be used in place of a number of single-purpose power drives is described in a folder from U. S. Expansion Bolt Co., 619 State St., York, Pa. The Men-E-Uses variable-speed power drive is designed for 1/4 to 2-hp motors. It is offered in two models to provide an unlimited selection of speeds from 1 to 750 rpm.

The literature describes the mechanical components of the drive, its operating features, and mounting methods.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 754.

Gar Wood Opens New Sales Branches

With an eye to increasing market coverage and gaining wider distribution for the company's products, Gar Wood Industries, Wayne, Mich., manufacturer of truck and heavy-duty machinery, has opened two new direct factory sales branches in Oklahoma and Illinois.

Located in Tulsa, Okla., and Springfield, Ill., the new branches will distribute the complete line of Gar Wood truck equipment, including hydraulic hoists and dump bodies, winches, and cranes.

The Tulsa branch, under the management of D. C. Royce, will continue to operate as a Gar Wood parts depot, while the Springfield branch, managed by Carroll Merriett, will maintain operations as a mounting station for Gar Wood bulldozers and power control units.

New Book Is Published On Welding Engineering

The many aspects of welding engineering are treated in "Welding for Engineers", a book of fundamental welding principles published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. Principles of such subjects as cold welding, hot pressure welding, resistance welding, and braze welding are followed first, by a discussion of unit processes, then by more complicated processes.

The book covers heat and temperature during fusion welding, permanent-electrode arc welding, mechanical effects encountered in welding, and weld inspection and testing. Numerous diagrams are included.

Harry Udin and John Wulff, both of the department of metallurgy of the Massachusetts Institute of Tech-

nology, and Edward R. Funk, engineering consultant with Goodyear Aircraft Corp., are the authors. Designed primarily as a text, the book may be ordered at \$7.50 per copy from the publisher.

Engine-Starting Fluid Sprayed Into Air Intake

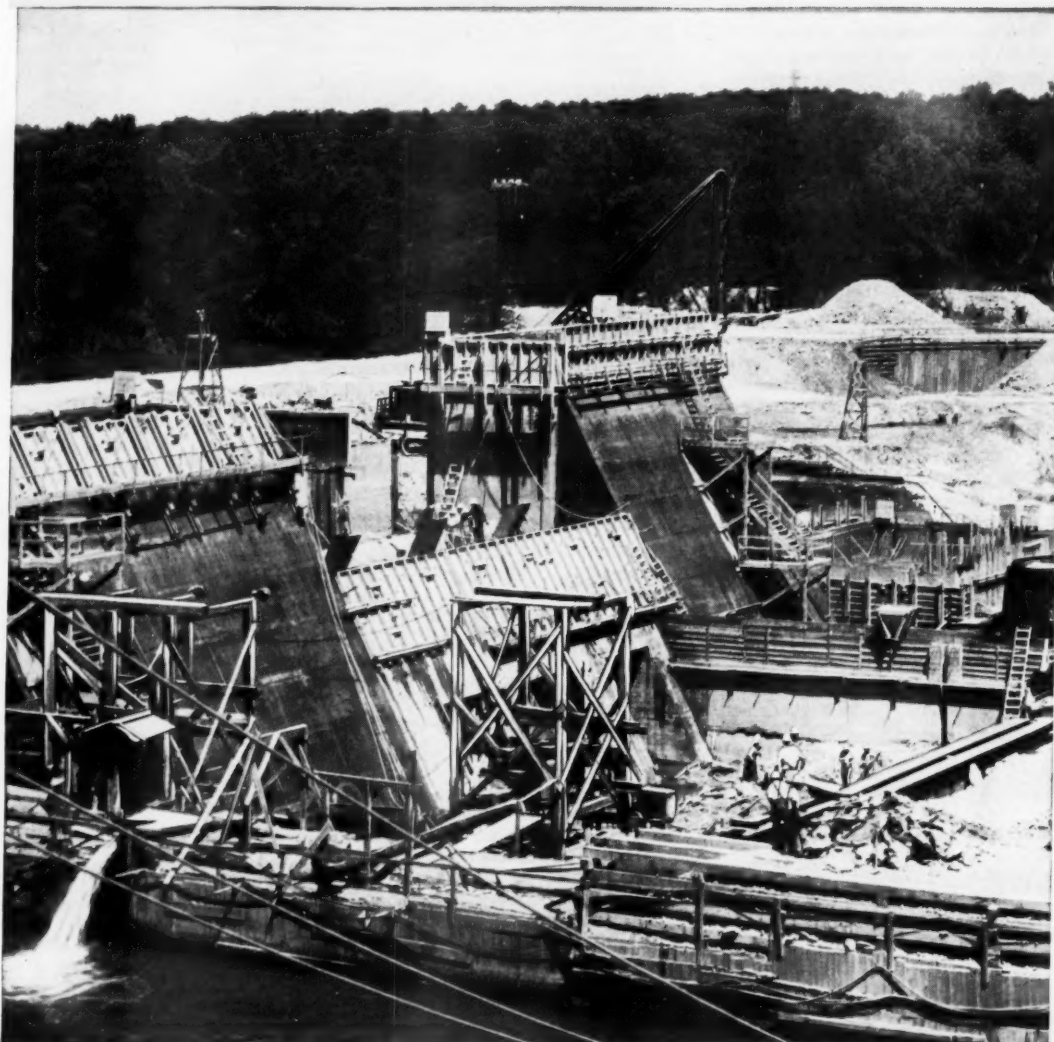
■ A fluid sprayed into cold diesel and gasoline engines to start them quickly is described in a folder from Spray Starting Fluid Co., P. O. Box 584, Camden 1, N. J. The Spray priming fuel is atomized directly into the engine's air stream.

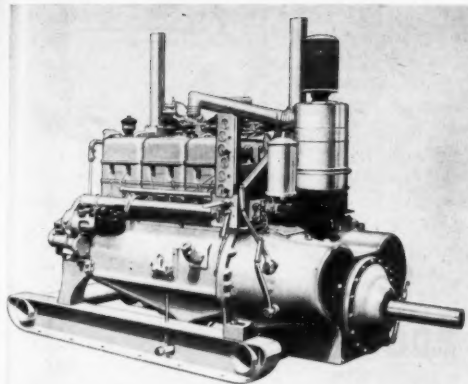
The literature recommends use of the starting fluid in the engines of tractors, bulldozers, etc.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 758.

On VEPCO'S Roanoke Rapids, N. C.

it's SHELL.*





Dual six-cylinder engines mounted in parallel give the new Minneapolis-Moline 1600-12A power unit a range of 252 to 290 hp.

Dual-Engine Power Unit Delivers Up to 290 Hp

■ Horsepower in the 252-to-290 range is provided in the new Minneapolis-Moline 1600-12A dual-engine power

unit. The unit operates with 12 volts on either natural or LP gas. Horsepower ratings are: 290 at 1,300 rpm

and 273 at 1,200 rpm on LP gas; 262 at 1,300 rpm and 252 at 1,200 rpm on natural gas.

Dual six-cylinder engines of the MM 800-6A class, mounted in parallel, are geared to a single power-takeoff shaft. Displacement is 1,600 cubic inches. Bore and stroke are $5\frac{1}{8} \times 6$ inches.

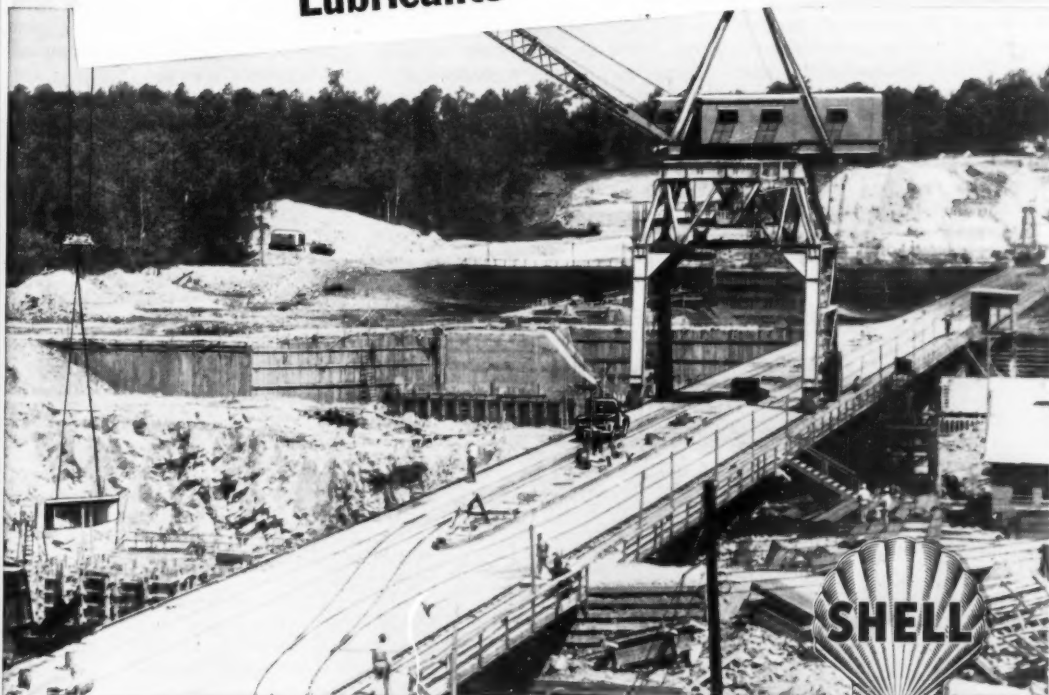
The new power unit is designed for use with large-volume pumps, generator sets, drilling equipment, crushers, and similar heavy machines.

For further information write to Minneapolis-Moline Co., Box 1050, Minneapolis 1, Minn., or use the Request Card at page 18. Circle No. 829.

Hydroelectric project . . .

**Gasoline
Fuel Oil
Diesel Fuel
Kerosene
Industrial
Lubricants**

**Solvents
Motor Oils
Anti-Freeze
Greases
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Motor Oil**



The Roanoke Rapids Project for the Virginia Electric and Power Company, being constructed by Stone & Webster Engineering Corporation, is going full speed ahead. This extensive job keeps hundreds of pieces of heavy construction equipment busy, day and night. Nearly 100% of this equipment relies on Shell Industrial Lubricants and Fuels to meet the rigorous operating conditions.

When completed, Roanoke Rapids project will supply 100,000 kilowatts of electricity for Vepco's system.

Widely used in construction work and wherever heavy duty equipment operates, Shell lubricants protect machinery and at the same time keep maintenance costs at rock bottom. Perhaps it will pay you to look into the savings of a 100% Shell program.

SHELL OIL COMPANY

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100 BUSH STREET, SAN FRANCISCO 6, CALIF.

*A diligent search could uncover only one piece of Vepco's equipment NOT using a Shell product.

Booklet Tells How to Use Variety of Concrete Forms

■ A variety of Atlas Speed forms available for constructing walls, floors, columns, dams, manholes, and circular tanks is illustrated in a new booklet from the Irvington Form & Tank Corp., 20 Vesey St., New York 7, N. Y. A great deal of specific information on how these forms are used economically on particular types of jobs is given in the booklet.

The instructions given include specifications on all necessary parts; details on erecting, pouring, and stripping; and cost data.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 750.

Pneumatic Systems For Conveying Materials

■ Pneumatic conveying systems that handle cement, gravel, sand, calcium chloride, and similar materials are described in detail in a booklet from Convaire Corp., 714 Brookline Blvd., Pittsburgh 26, Pa. Three types of conveyors are illustrated: vacuum, vacuum pressure, and pressure systems. Selection of the proper type of unit depends on the work to be done, the desired conveying rate, and the distance to be covered.

Detailed line drawings illustrate a number of typical installations.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 767.

Details on Performance Of New Diaphragm Pump

■ Literature from the Gorman-Rupp Co., 305 N. Bowman St., Mansfield, Ohio, describes a new diaphragm pump. According to the literature, the pump will do as much as 400 per cent more pumping than comparable units at a 25-foot static lift. Diaphragm life has been increased, and there is generally less wear in the mechanism of the new pump.

The pump weighs only 130 pounds and can be handled by one man. It is available as either a gasoline-engine-driven or electric-motor-driven unit.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 744.

Gar Wood Appoints Three New Managers

H. J. Howerth has been appointed product sales manager for truck winches and cranes by Gar Wood Industries, Wayne, Mich. He will be responsible for the development of a new program to increase Gar Wood sales.

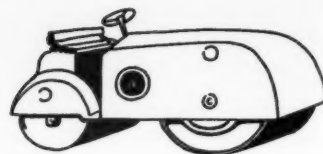
Mr. Howerth has been assistant sales manager of Gar Wood hydraulic hoists and dump bodies since 1953.

Don L. Herring has been made manager for tractor equipment sales in six southern states. From his headquarters in Atlanta, Ga., he will cover the states of Florida, Georgia, Alabama, North and South Carolina, and Tennessee.

The Minneapolis, Minn., direct factory truck-equipment sales branch will be headed by Lelf Unstad. He will handle sales of hydraulic hoists and dump bodies, winches, and cranes distributed by the branch.



EXCAVATING EQUIPMENT



Graders and Rollers

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599 Chestnut Street, Sunbury, Pa.

THE GRADER is normally moved forward while working. It can be worked in reverse by using the back of the blade for spreading or smoothing, or by reversing the blade so that its cutting edge faces to the rear during an operation.

In forward operation, the grader is kept in line by steering and by leaning the front wheels away from the direction of thrust or toward the direction of turn. The wheels may also be leaned to avoid rubbing vertical banks.

The blade is controlled in a number of ways. The ends can be raised or lowered independently of each other, or together. It may be positioned across the line of travel, parallel to it, or at any angle. It can be shifted to the side and into a vertical position by power. There are also mechanical adjustments for extending its range.

The blade is ordinarily kept near the center of the tipping adjustment so that the top of the blade is directly over the edge. Increasing the lean forward decreases cutting ability and causes the blade to ride over its load rather than to push it. It diminishes the likelihood of catching on solid obstructions and may be used for rapid light planing of rather regular

surfaces and for mixing operations. When leaned back, the blade cuts readily but tends to let the load ride over its top and to dig into obstructions. In machines not carrying a scarifier this tilt may be used to cut hard surfaces.

A grader blade may be used as a bulldozer to a limited extent, often in spreading piles of loose material. If there is space to work beside the pile, the blade should be extended well to the side and the pile reduced in a series of cuts.

The grader can also be used for light cut-and-fill work in building and re-grading roads.

Load Capacity

The load which can be pushed is limited by the power and traction of the machine and will usually be smaller than that which can be pushed by a crawler of the same weight, although it will be moved faster. The blade itself is quite low, but being more concave than the dozer blade, imparts a more pronounced rolling action to the load so that a large quantity can be pushed without any of the material spilling over the top.

If much dozer work is to be done, it may be advisable to install a front

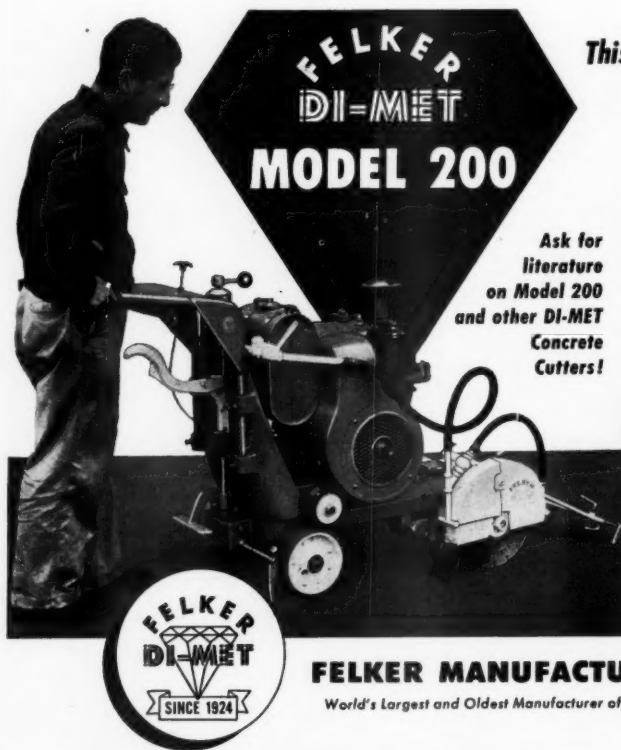
dozer blade on the machine.

If the blade is set at an angle, it can be used to plane off irregular surfaces by lowering them sufficiently so that enough material will be cut off the humps to fill the hollows. Enough extra material should be cut to keep a partial load in front of the blade. The forward and sideward movement of the loosened dirt serves to distribute it effectively. If a windrow is left at the trailing edge of the blade, it is picked up on the next pass. On the final pass, a lighter cut is made, and the trailing edge of the blade is lifted enough to allow the surplus material to go under rather than around it, to avoid leaving a ridge. This type of light planing usually produces a smooth surface.

Windrows should not be piled in front of the rear wheels, as they will interfere with grading accuracy and traction.

Stones are a serious nuisance, both because they make smooth grades difficult or impossible and because they present hazards to machine and operator during cutting operations. If the cut is shallow or the road dirt compacts readily, it is possible to blade loose stones out of the road while grading it.

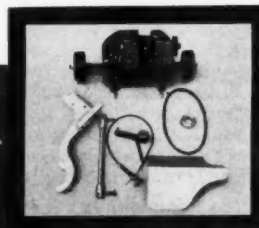
Large rocks or those firmly im-



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available with choice of equipment;
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on Model 200
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coolant pump assem-
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stalled. Starter and
generator available
on original order
only.
Left:
Power Drive Assembly

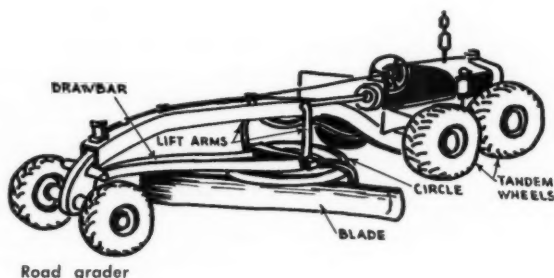
FELKER MANUFACTURING CO. TORRANCE • CALIFORNIA

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bedded in road or shoulders are dangerous. If the blade hooks into one too solid to move, the grader will jump sideward or stop abruptly. This imposes severe shock on the blade, circle, and power train, and is liable to throw and injure the operator. Danger of serious consequences increases greatly with higher speeds, so that all cutting should be done in low gear and often at part throttle where buried rocks or roots are expected.

Patterns

Road building or grading may be done on three general patterns. One is to work the two sides alternately, turning at the end of the strip. Another is to do one side at a time, working in both directions by means of a reversible blade. The third is to grade one side at a time, with the reverse trips nonworking or utilized for light work with the back of the blade. Each pattern has peculiar advantages.



Road grader

The pattern used is determined by the length of the strip being worked, the turning space and footing, and the reversibility of the blade. The machine does its best work going forward, and this increased efficiency must be balanced against the time, labor, and risks involved in turning. In a long run, even difficult turning maneuvers may take an insignificant part of the working time; on the other hand, easy turns may not be justified on a short run. A general

rule is that a grader should not be turned if the strip is less than 1,000 feet long.

Turning may be a serious problem. Because of lack of a differential, the rear wheels drive straight forward and the tandem arrangement gives them considerable resistance to sideward movement. Weight on the front wheels is light, and even when leaning properly the tires may not have enough traction to turn the machine on loose material, but will skid and slide sideways.

If the front tires do grip enough for a sharp turn (minimum radius is about 36 feet), the rear wheels on the inner side of the curve must spin or those on the outside drag enough to compensate for the different distances they travel.

It is often necessary to make a gradual turn either by swinging in a wide circle or by jockeying backward and forward in order to avoid damaging or loosening the turn spot. It is sometimes possible to do most of

the turning on ungraded areas where no damage will be done.

Other factors affecting the choice between turning and working in reverse may be idle travel distance between the end of the work and the first possible turning area, interference with traffic while turning, and chances of the machine's getting stuck in soft or wet ground.

Tandem drive affords powerful traction, but a careless operator may hang the blade or circle up on ridges

This is the seventh in a series of articles made up of excerpts from a new book, "How To Operate Excavation Equipment", by Herbert L. Nichols, Jr., published by North Castle Books, Dept. N, 212 Bedford Road, Greenwich, Conn. Priced at \$2.50 for cloth and \$3 for de luxe leatherette binding, the book may be obtained from the publisher or through the Book Order Department of CONTRACTORS AND ENGINEERS, 470 Fourth Ave., New York 16, N. Y.

or rocks, and the front wheels particularly may sink into mud. Recently filled ditches which have become water-soaked make grader traps. Repeated sharp turns on sandy soil may loosen it enough so that the rear wheels will spin in it.

Older and smaller models of graders may not be able to turn the blade to cut in reverse. Many of the newer ones cannot be reversed unless teeth are removed from the scarifier, and if the soil were so hard as to require loosening with the teeth, it would be impractical to remove them until all the loosening was finished. While the change can be made quickly in some machines, in others, maneuvering the blade into reverse position may take more time than would be justified to work a short trip.

The back of the blade is also effective for smoothing loose material, and can sidecast limited quantities of it. It can be safely used in fast reverse, as it will ride over obstructions rather than digging into them. During the cutting and transporting passes, back-blading is not effective, but it may prove useful in later operations such as finishing.

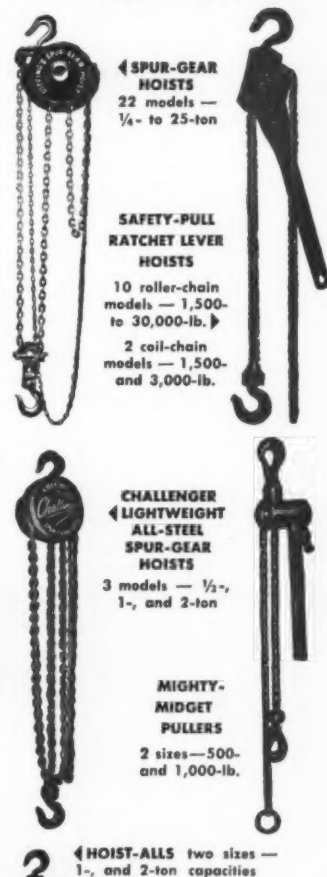
A grader, without assistance from other machines or hand work, can shape up a road across a field by digging a pair of parallel ditches and using the soil to build the road crown. However, sod can make the finishing operation tedious and unsatisfactory, as it tends to ball up under the blade and catch and pull out of loose surfaces. For this reason, the strip should

be thoroughly disked before grading is commenced.

Manufacturers recommend doing forward ditch cuts and other heavy grader work in second gear at a speed of 3 or 4 mph. Blading windrows and similar handling of loose soil can often be done in third gear at speeds

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12 models — 1 1/2- to 24-ton

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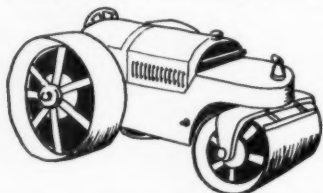
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Model 115 "Tankar" Steam Heater is small, compact, highly portable and easily handled by one man. Can also be used to clean equipment, garage floors, thawing, sterilizing, etc. Automatic controls make it the last word in safety. Take a further look at this amazing Littleford Unit. Write for Bulletin 21.

up to 6 miles. However, when there is loose rock, lower speeds will pay off in improved quality of work. In the presence of buried obstructions heavy enough to stall the grader, very slow movement may be required for protection of both the operator and the machine.

Rollers

Sharp steering of rollers is liable to cause scuffing and may result in severe damage to the surface when the roller is moving backward. A sharply turned front roll has a tendency to dig in on the edge turned toward the rear, and then tip so as



to dig in further, so that a rut is plowed in the surface. Work sequences should be arranged so that turns can be made while moving forward.

The sprinkling system cannot be used in compaction of subgrades, as dirt or gravel will stick to the wet rolls and come up in chunks, spoiling the surface. If water is needed for the compaction, it should be supplied by water wagons in advance so that the area can dry slightly before the roller reaches it.

The roller should not be stopped repeatedly in the same place, particularly on blacktop, as this may cause creeping and formation of pock-ets.

A pattern is rolled the first time as nearly normally as possible, and curving passes made later. Spaces which the roller cannot reach without excessive maneuvering should be hand tamped, or a smaller roller should be used in them. If an obstruction is both low and strong, it may be possible to ride the front roll over it and straddle it with the rear rolls.

Rolling speeds are slow; 1½ to 3 mph is usual. Rolling should be con-

tinued until no advantage is noted from successive passes. Presence of too much water in the subgrade may make its compaction impossible, but long rolling will at least bring much of the water to the top where it can evaporate more readily. The water-logged condition results in a rubbery action of the ground, in which it goes down under the rolls and springs back into nearly its original position when they have passed.

This condition may not be apparent at the start of the work, as the larger air spaces in the unconsolidated soil may be adequate to hold the water. As these spaces are reduced, however, the water is forced out of them and becomes a lubricant between all the particles.

The scarifier is used principally in ripping up old blacktop or oiled surfaces, but can also be used to pull out rocks or to loosen hard soils for a grader.

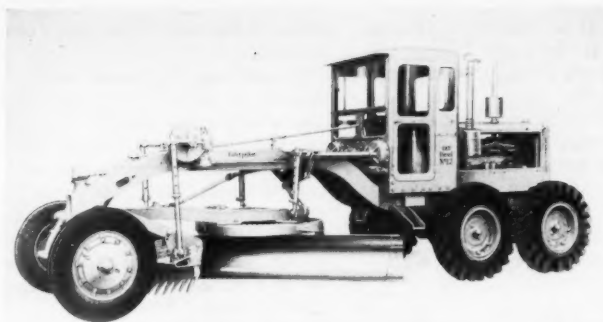
A roller does not have much traction on hard surfaces, so under many conditions it does not have enough pull to scarify effectively. This may be partially remedied by working downhill, by shallow cutting, or by reducing the number of teeth.

If a heavy pull is required, the drive rolls may be fitted with spikes. Tapered plugs are driven out of the rolls and points substituted. This is a laborious operation unless the rolls are new or spikes have been installed frequently. With worn rolls, there may also be some difficulty matching the plugs with the holes when replacing them, so that the smooth surface will not be spoiled by pits or bumps.

(TO BE CONTINUED NEXT MONTH)

Clark Equipment News

Clark Equipment Co., Buchanan, Mich., has acquired the inventories, engineering designs and products, tooling, trademarks, patents, and certain other assets of the Torcon Corp., Ashtabula, Ohio, manufacturer of torque converters.



Greater horsepower and from-the-seat starting are among the new features of the Caterpillar No. 12 motor grader.

Motor Grader Now Has Increased Horsepower

Increased horsepower is one of the several improvements in the Caterpillar No. 12 motor grader. The improved No. 12 is now rated at 115 hp. In addition, the clutch and transmission have increased capacity to match the greater horsepower.

In both the Caterpillar No. 12 and No. 112 graders, convenient one-lever starting at the operator's position is now available. These units are also equipped with accelerator-decelerator pedals that permit changing speeds without changing the throttle setting.

For further information write to the Caterpillar Tractor Co., Peoria 8, Ill., or use the Request Card at page 18. Circle No. 710.

Metallic Foil Name Plate May Be Easily Attached

A metallic name plate that is attached to equipment about as easily as an ordinary decal is available from the North Shore Nameplate Co., Bank of Manhattan Bldg., Bayside, Long Island, New York. The Speedy-Cal name plate is made of a fine metallic foil laminated with a transparent bonding material. It can be fastened to curved as well as flat surfaces without drilling.

The name plate can be made in any

size and in a variety of colors. Rough sketches or art work supplied by the customer should be increased four times in size for sharp reduction.

For further information write to the company, or use the Request Card at page 18. Circle No. 729.

Details on Trailer For Storing Tools

The all-steel tamper-proof tool trailer introduced by Aeroil recently is described in a new bulletin. Features of the Tool-Master trailer include battery-operated blinker lights, side work shelves, a sliding tool tray, and ability to trail easily behind passenger cars and light pickups.

To obtain this literature write to Aeroil Products Co., Inc., 75 Wesley St., South Hackensack, N. J., or use the Request Card at page 18. Circle No. 722.

Versatile Excavator

The first of a new series of application bulletins written to show contractors the wide variety of jobs the Gradall excavating machine can do has been issued by the Gradall Division of the Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 704.



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Send the coupon today for your copy of our new catalog showing the wide range of application as well as the many exclusive features that make the Acker All-Purpose Digger the most versatile and useful you can buy! TWO MODELS TO CHOOSE FROM — Jeep mounting with compact, power take-off or skid-mounted with self contained power plant for truck mounting.

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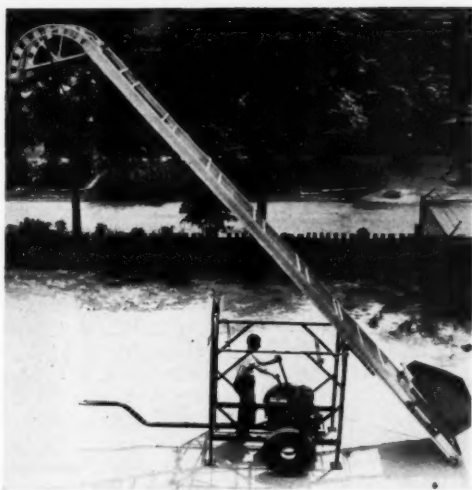
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The Lad-E-Vator is quickly pulled to working level by the motor mounted on the new Trail-Erector trailer unit. The trailer also adds mobility to the hoist.

Towing Unit Makes Hoist Mobile and Self Erecting

■ The Lad-E-Vator building-material hoist can now be mounted on the new Trail-Erector trailer unit for faster moves from one location or job to another. A tow car or truck hitched to the Trail-Erector pulls the entire hoist unit away from the wall or other installation with no time lost in dismantling or reassembly. Mounted in this way, the Lad-E-Vator is self-erecting. When the portable unit reaches the new job site, the motor mounted on the Trail-

Erector raises the hoist tower to working height.

This building-material hoist, which operates as a skip hoist and carries loose materials in a scoop, is also available with a wheelbarrow platform.

For further information write to the Campbell Equipment Company, 2122 N. Menard Avenue, Chicago 39, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 718.



Model SB-70
7' x 42"

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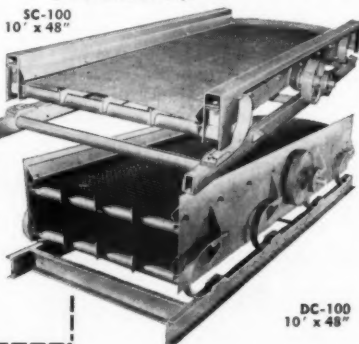
Kolman Manufacturing Co.
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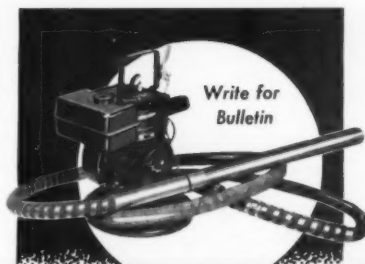
DC-100
10' x 48"

Merritt-Chapman & Scott Offer for Marion Accepted

With shareholders of more than 50 per cent of the stock in Marion Power Shovel Co. approving, Merritt-Chapman & Scott Corp., New York, N. Y., recently acquired the Marion, Ohio, firm.

Under the terms of the offer,

M-C&S acquires at least 80 per cent of Marion common stock outstanding at the time of the offer. A proposed exchange of M-C&S and Marion stock also becomes effective with approval of the offer by Marion stockholders.



ROETH VIBRATOR, INCORPORATED | 9229 CHESTNUT ST. FRANKLIN PARK, ILL.

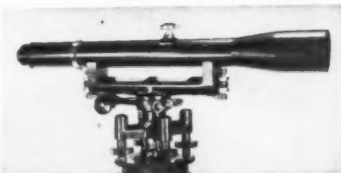
ROETH LIGHTWEIGHT PORTABLE VIBRATOR UNIT with many time saving applications. Fits right into the Contractor's daily work—sanding, wire brushing, grinding, surfacing, drilling. Powered by 2-H.P. Air-cooled Gasoline Engine. Direct take-off from engine crank shaft permits variable speeds 2000 to 4000 R. P. M. in Vibrator Head.



GURLEY--the Standard Wye

or Dumpy Level...

Rugged, Reliable, Precise



Now featuring:

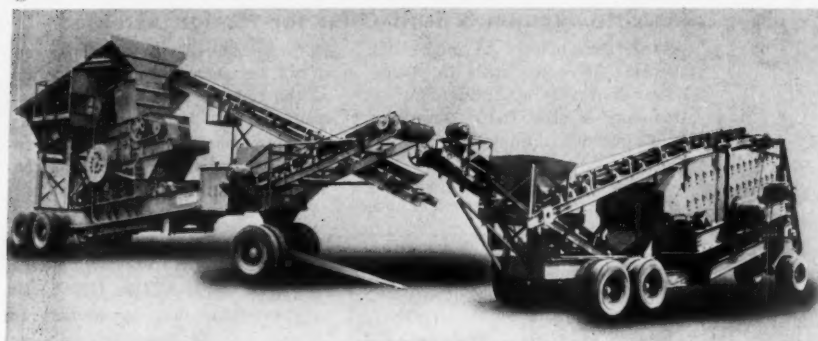
1. Covered glass reticles (no delicate wires to break)
 2. Coated optics, outstanding illumination and clarity
 3. Internal-focusing telescope for dust protection
 4. Covered leveling screws, no threads exposed
 5. Leaf-type tangent springs: smooth-acting, unaffected by dust and dirt
 6. Tangent screws impinge on agate bearings
- Made in 18" Wye or Dumpy models with rigid tripod and mahogany carrying case.



Plus Variable Power, now standard on all Gurley transits and levels, permits wide range of magnification with one eyepiece. Change your magnification to suit weather and light conditions. Built-in haze filter. Write for "Facts on VP"



W. & L. E. Gurley, Fulton & Station Streets, Troy, New York
Established 1845



Two-Unit Crushing, Screening, and Loading Plant Works With Wet Material

■ A new two-unit hammermill crushing, screening, and loading plant has been introduced by Universal Engineering Corp., 620 C Ave. N. W., Cedar Rapids, Iowa. The plant is

designed for operation in wet sticky materials and in quarries contaminated by clay balls and mud pockets. A Bulldog Model HM-04-NC portable hammermill unit has been teamed with a Universal Model 5142 portable screening unit. The combination will produce aglime and road rock, aglime and chips, or 100 per cent aglime as desired.

The entire crushing operation is performed by the hammermill operating in closed circuit. The hammermill is equipped with a moving breaker plate and a moving cleaning bar to prevent buildup of material in the breaking chamber, and to keep the discharge free at all times. The hammermill unit also consists of a 42-inch x 12-foot apron feeder with a shovel-loading hopper, a 36-inch front-delivery conveyor, an 18-inch return-circuit conveyor, and an operator's platform, all mounted on a steel gooseneck truck with pneumatic tires. With the exception of the hammermill, which is diesel-powered, all units are electric-push-button controlled.

The screening unit consists of a 5 x 14-foot double-deck inclined gyrating screen, with 70 square feet of screening area in each deck and a ball-tray deck under the second deck for maximum efficiency when producing aglime. It also has a 30-inch channel-frame feed conveyor, a 30-inch front-delivery conveyor, a 24-

inch side-delivery conveyor, and an 18-inch channel-frame return-circuit conveyor—all mounted on a pneumatic-tire gooseneck truck. All-electric drive is controlled from a panel on the operator's platform of the crushing unit.

For further information write to the company, or use the Request Card at page 18. Circle No. 830.

Components for Making Sectional Conveyor Belts

■ A complete set of conveyor-belt components that a contractor may assemble in his own shop is offered by the Standard Products Division, Stephens-Adamson Mfg. Co., Aurora, Ill. These shop-assembled units are designed for lengths up to 50 feet, and from 51 through 100 feet in both 18 and 24-inch belt widths. A new catalog describes conveyor components in stock.

Components include the new S-A 745 carrier and return roll, head and tail pulley assemblies, drive assembly, roller-type holdback, spring-type belt cleaner, bent-plate decking, belt, and the Swivelpiler for extending the storage area at the conveyor discharge. The buyer may choose either a Saco speed-reducer drive with an overhead motor mounting or a shaft-mounted reducer.

To obtain Bulletin 1454 write to the company, or use the Request Card at page 18. Circle No. 831.

Dealers and Their Guests May See Equipment Made

■ Allis-Chalmers now offers facilities for groups or individuals to visit its Springfield, Ill., works as guests of equipment dealers. Scheduled Mondays through Fridays, special one-day programs take visitors behind the scenes so that they can see for themselves the "know how" that goes into the manufacture of the concern's equipment.

A booklet giving details on this service to dealers and equipment buyers is available on request. While the guest service is available at the Springfield plant only, visitors are welcome also at the other Allis-Chalmers plants around the country. These are located at La Porte, Ind.; West Allis, Wis.; La Crosse, Wis.; Cedar Rapids, Iowa; Gadsden, Ala.; and Oxnard, Calif.

To obtain this literature write to the Allis-Chalmers Mfg. Co., Tractor Division, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 695.

Dust Collectors for Use With Rock-Drilling Units

■ Portable dust collectors for use in rock drilling and in general excavation are illustrated in a folder from the Markley Dust Control System, Inc., 80 Snyder Road, Ramsey, N. J. Markley units work on a vacuum principle; as dust is created, a stream of air conducts it away from the drill hole. They have completely housed power units and a single-gate bottom discharge. The collectors can be emptied while in operation.

Two models are illustrated. The Model No. 1 can handle one 4-inch-bore wagon drill or two 2½-inch-bore jackhammers. The second unit, Model No. 4, can work with two 4-inch-bore wagon drills or four 2½-inch-bore jackhammers.

To obtain this literature write to the company or use the Request Card this is bound in at page 18. Circle No. 763.



● Where the going is tough—on the Pennsylvania Turnpike, New York Thruway, West Virginia Turnpike and elsewhere—contractors choose rugged, powerful McCarthy Drills.

On the Ohio Turnpike, near Windham, this McCarthy Vertical Auger Drill drills 6-inch blast holes to a depth of 18 feet at the rate of 22 holes in 8 hours.

Operators like the great new McCarthy. It is rugged, mobile and dependable. In any earth or rock formation consisting of compacted sand and gravel, hardpan, shale, and most sandstone formations, the McCarthy is faster than any other.

Easy-to-move, easy-to-set-up McCarthy Verticals operate on gasoline, diesel or electrical power units. They require only a two-man crew.

Get the facts about the McCarthy—"choice of the turnpike contractors"—and see for yourself how faster drilling and dependable performance combine to give you bigger profits.



DRILLING EQUIPMENT
SINCE 1901

THE SALEM TOOL CO.

806 SOUTH ELLSWORTH AVE.
SALEM, OHIO • U.S.A.



with this WISCONSIN-POWERED UNIT!

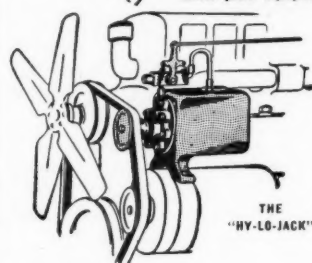
This sturdy unit takes a six-foot-wide bite in any kind of snow, loading from 7 to 12 cubic yards of snow per minute in trucks or throwing it clear. Builder is Krause Industries, Baraboo, Wisconsin and the snow blower is constructed to mount easily and quickly on the Hough Payloader Tractor-Shovel. A Wisconsin Heavy-Duty Air-Cooled Engine provides the power. Equipment builders and buyers are choosing Wisconsin Engines over all other types in the 3 to 36 hp. range . . . as the most satisfactory and fool-proof power to fit both the job and the machine. You'll find a model and size available to fit every power requirement . . . 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 36 hp. Write for Bulletin S-164.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

POWER HYDRAULICS for Snow Plows



- Clutch operated models
- Thousands in use—
- 1000 ± 2 Pressure, 1 Gal. Per Minute
- Fit all trucks
- Fan belt driven
- Electric Models (6 or 12 volt) also available

• Write Hydraulic Division

MONARCH ROAD MACH. CO.

324 North Front Ave.
GRAND RAPIDS 4, MICHIGAN

CONTRACTORS AND ENGINEERS



This new small ditcher digs trenches with square corners that require no hand forming, according to Gar Wood Industries.

Small Ditcher Digs Foundation Trenches

■ A small maneuverable ladder-type ditcher that is easily transported from job to job is announced by Gar Wood Industries, 36253 Michigan Ave., Wayne, Mich. The new machine is designed for digging trenches for water, gas, sewer, electric, and telephone cable lines, and for building foundations. It digs 5 feet deep for 8, 10, and 12-inch widths of cut, and 4 feet deep for 14 and 16-inch widths.

The crawler-mounted Buckeye Model 403 ditcher features independent

bucket chain and crawler speeds that give the machine flexibility. The combination of main and traction transmissions provides eight digging speeds forward, from 1.71 to 16.28 feet a minute.

For concrete foundations, the ditcher digs a clean trench with square corners. No hand forming or backfilling is required, and concrete can be placed without forms.

For further information write to the company, or use the Request Card at page 18. Circle No. 832.

List Recommendations for Pressure-Treated Wood

■ Information for users of pressure-treated Douglas fir and other west coast woods is offered in a new folder issued by the Western Wood-Preserving Operators' Association, 1410 S. W. Morrison St., Portland 5, Oreg.

Commercially available chemical treatments applied to wood by vacuum-pressure methods to protect against rot, insects, fire and marine borers are described, together with recommended retentions of preservatives for safeguarding wood when ex-

posed to various hazards. Pressure treatments covered include coal-tar creosote, creosote-petroleum solutions, pentachlorophenol, Boliden salts, Chemonite, chromated zinc chloride, and Wolman salts preservatives. Fire retardants are Minalith, Pyresote, and chromated zinc chloride (FR).

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 833.

Re-Lugging Service For Off-Highway Tires

■ A service that re-lugs large off-the-highway tires is described in a folder from American Tire Machinery, Inc., 718 S. Elliott St., Muncie, Ind. The Vacu-Lug service is available to contractors through over 100 shops that use the re-lugging process around the country.

It is claimed that the cost of re-lugging used casings is under half the cost of new tires. The cost is proportionately less as tire sizes increase. The same casings can be re-lugged repeatedly to give them a new tractive surface each time.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 756.

Catalog on Motor Grader

■ The Adams No. 550 motor grader, powered by a 115-hp diesel engine, is described in a new catalog just released by the manufacturer. The catalog covers the construction and operating advantages of the machine, and shows its application to a wide variety of work.

To obtain this literature write to the J. D. Adams Mfg. Co., P. O. Box 853, Indianapolis, Ind., or use the Request Card at page 18. Circle No. 691.

Hardsurfacing Alloy

■ The properties of a new alloy, available either in the form of hard-surfacing weld rods or in cast form, are described in a new folder from Coast Metals, Inc., 201 Redneck Ave., Little Ferry, N. J. The alloy is offered as a bare rod for gas welding, or coated for arc welding. It is reported to be resistant to wear from heat combined with abrasion or impact, as well as steam erosion and many types of corrosion.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 772.

Blaw-Knox Operations

■ The diversified manufacturing activities of the Blaw-Knox Co., are shown in a new brochure released by the company. The booklet contains illustrated material on all major departmental operations in the company's eleven divisions: Blaw-Knox Equipment, Buřlovak, Chemical Plants, Foote Construction, Lewis Machinery, National Alloy, Power Piping and Sprinkler Rolls, and Union Steel Castings.

Emphasis is placed on products and services offered and their industrial applications. Other features are data on B-K plants and a list of catalogs.

To obtain this booklet, "This Is Blaw-Knox", write Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 30, Pa., or use the Request Card at page 18. Circle No. 702.

NOW!
LABYRINTH
WATERSTOPS
...the standard
water seal on
outstanding
construction jobs

● Quickly accepted by the nation's leading engineers and contractors, Labyrinth Waterstops—the first really satisfactory water seals—are now being used on all types of jobs...hydro electric plants, atomic energy plants, industrial plants, water and sewage plants, water reservoirs, underground and surface parking lots, swimming pools plus a host of lesser projects. (Names, and details furnished on request.) Why not get additional information on this time and money saving water seal? Just mail coupon below.



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WATER SEALS, INC.

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Please send complete information on Labyrinth Waterstops.

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PUMP VALUE!

LOOK AT THESE MONEY—SAVING FEATURES

- Faster Dual Volute Priming
- Self Cleaning Case
- Lighter Weight—Easier to Move
- Long Life Seal
- Half the Parts—Easier to Service
- Unitized Construction—Trouble Free Operation

CONSTRUCTION MACHINERY COMPANY, Waterloo, Iowa

Models shown: 4M-1 1/2", 15M & 20M-3", 7M & 10M-2", 30M & 40M-4"

Armco Drainage to Expand Steel Building Production

A revamping of its development programs, sales plans, and production facilities is being undertaken by Armco Drainage & Metal Products, Inc., as a result of its expansion in the field of prefabricated steel buildings. The company is a subsidiary of

Armco Steel, Middletown, Ohio.

Heading the department is D. H. Malcom, formerly manager of the marketing service department for the parent company. Robert Blickensderfer will coordinate technical phases of the new program.



STARTING FLUID

A highly volatile auxiliary fuel for quick starting of Diesel engines. Makes for sure-fire starts in all weather—prolongs battery life—saves time and money. Available at an economical, reduced price.

Case of twenty-four 1 lb. cans—\$28.75
subject to quantity discounts. Freight
prepaid on lots of five or more cases.

STA-VIS OIL COMPANY
1015 PIONEER BLDG. ST. PAUL 1, MINN.



This CLEVELAND

Digs 4 to 5 Jobs Every Day

This "Baby Digger" meets heavy daily schedules of scattered jobs, digs on time, every time, hustles safely from job to job at legal limit speeds on a compact Cleveland trailer.

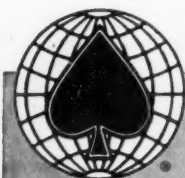


This CLEVELAND

Lays Pipe, Fills Trench, Tamps Fill

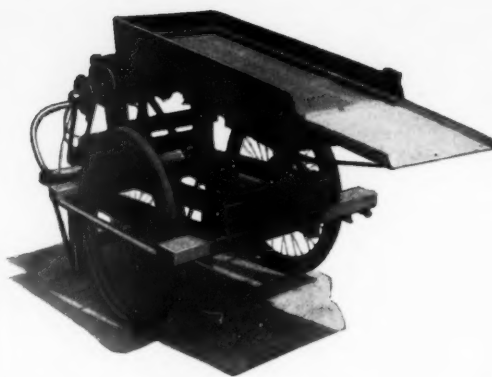
The Cleveland "80" (or "80-W")—widely employed in gas distribution construction—saves money, men and machines. One-man-operated, it does a faster, safer, cleaner job on each of these construction operations.

Write for descriptive bulletins and specifications, or get the full story on CLEVELANDS from your local distributor



THE CLEVELAND TRENCHER COMPANY
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

CLEVELAND



Powered by an electric motor or gasoline engine and mounted on wheels, this small powered screen serves several utility screening purposes.

Small Powered Screen Mounted on Two Wheels

A portable screen manufactured by The Kent Machine Co., Cuyahoga Falls, Ohio, speeds screening of sand and other aggregate and often makes available for use material that might otherwise be wasted.

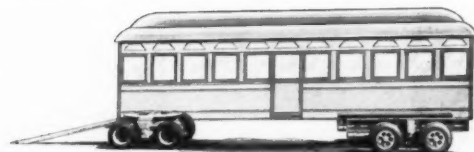
The unit is mounted on wheels and powered by an electric motor or gas-

oline engine. It is wheeled over the mixing box into which the fine material drops, while the larger pieces are discharged toward the end of the vibrating screen.

For further information write to the company, or use the Request Card at page 18. Circle No. 834.

Heavy-Duty Dollies for Moving Buildings

Rogers Brothers offers a line of heavy duty dollies for moving buildings.



Dollies for moving buildings are available from Rogers Bros. Corp., 108 Orchard St., Albion, Pa., builders of low-bed heavy-duty trailers.

The dollies are constructed for use in several ways. In some cases, the buildings are bolted directly to dollies, while in other instances, they are mounted on a structure of heavy tim-

ber. Two sets of dollies are used in hauling very large buildings.

The units oscillate to distribute the load over all tires. Since they have heavy-duty tires and dual air brakes, relatively fast movement is possible.

For further information write to the company, or use the Request Card at page 18. Circle No. 835.

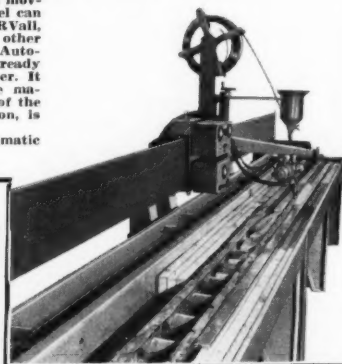
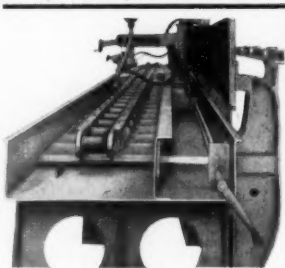
Portland Cement Office Moves to New Quarters

The eastern regional office and the New York district office of the Portland Cement Association have been moved from 347 Madison Avenue to

250 Park Avenue in New York City. One of 29 district offices, the New York office covers New York, New Jersey, and Connecticut.

TRACK RE-SURFACING, fast and at low cost with a BERKELEY ConSERVall

The tracks of any current model earth moving machine or crawler mounted shovel can be re-surfaced with a Berkeley ConSERVall, faster and at lower cost than by any other method. ConSERVall is a complete Automatic Welder and Re-surfacing Unit, ready for operation when it reaches the user. It handles the track as taken from the machine; no dis-assembly, or relocation of the track during the re-surfacing operation, is necessary. ConSERVall is simple and fully automatic in operation. No skilled operator is required; anyone can become



expert with a few hours instruction. It is widely used by equipment owners and dealers. With the addition of the Berkeley Rotator, and an extension to the Carriage Rail, idlers, rollers, sheaves, and other circular work can be re-surfaced.

Write for illustrated circulars, complete specifications, and prices.



PENN TOOL & MACHINE CO.

Danville, Illinois

Builders of production welding machines, jigs and fixtures
An Affiliate of Berkeley Equipment Company

CONTRACTORS AND ENGINEERS



"For Pete's sake!—get that pump going!"

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An advertising inch in the Trading Post is measured $\frac{7}{8}$ -inch vertically on one column. Space reservation close in the New York office on the 10th of the month preceding publication. Send your classified copy to:

The Trading Post, Contractors & Engineers
470 Fourth Avenue, New York 16, N. Y.

SACRIFICE SALE

Never before bargains like these!

1953 Tandem Axle HOPPER DUMP TRAILER

Serial 91-321-05065

Below Actual Cost!

This unit is a standard Trailmobile Model HB-662 and has been used only as a demonstrator. Capacity—14 cu. yards; length—35' overall; height—8'8" overall; twin hopper discharge doors; axles—18,000 lb. (2).



SURPLUS PRICE

Only \$3982.00 net

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Here's
Another... **Single Axle
HOPPER DUMP
TRAILER**

Serial 91-324-05064

Standard Trailmobile Model HB-66 Capacity 10 cu. yds. READY FOR IMMEDIATE DELIVERY! This is below actual cost!

Only \$2583.00 net (excise tax included)

F.O.B. Nashville

Check on
these Red-Hot
Specials NOW!

1953 BULK CEMENTER (Gramm)

1953 Trailmobile Asphalt Trailer

Both ready for immediate delivery!



WRITE—WIRE or PHONE TODAY... Jack Kruienga, National Used Trailer Manager

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Cincinnati 9, Ohio

The Trend
is to

TRAILMOBILE

Friendly Sales
and Services
from Coast to Coast

POWER AUTHORITY OF THE STATE OF NEW YORK

ST. LAWRENCE POWER PROJECT ADVERTISEMENT FOR PROPOSALS

FOR THE FURNISHING AND DELIVERING OF CONCRETE AGGREGATES

NEAR MASSENA, ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATION NO. PA-5-11013—ST. LAWRENCE CONTRACT NO. P4

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the production, furnishing, and delivery of concrete aggregates to Massena, New York until 10:30 A.M. Eastern Standard Time on the 21st day of December 1954 at the Authority's office, 270 Broadway, Room 1207A, New York 7, New York, at which time and place proposals will be publicly opened and read aloud.

The principal items are:

Estimates: 800,000 tons Natural or Manufactured Sand Fine Aggregate
1,700,000 tons Crushed Rock Coarse Aggregate in four grades

Specifications and Proposal Forms are on file in the Authority's office and in the office of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Specifications and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York after November 15, 1954, upon application and prepayment of a fee of Five (\$5.00) dollars per set of two bound copies of contract documents, no part of which will be refunded.

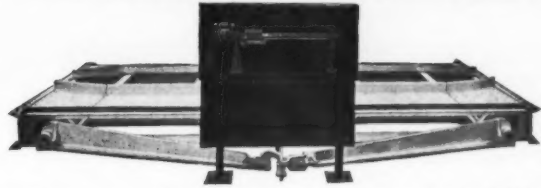
Bids must be made in duplicate upon the proposal forms included in and bound with contract documents. Guarantee will be required with each bid in an amount not less than 10 percent of the maximum price bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

WINSLOW—PORTABLE TRUCK SCALE

"THE CONTRACTORS' SPECIAL SCALE"



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacities: 15-18-20-30 tons.

Write us for name of your nearest distributor.

WINSLOW SCALE COMPANY

P. O. Box 1198

Terra Haute, Indiana

TRADING POST

POWER AUTHORITY OF THE STATE OF NEW YORK ADVERTISEMENT FOR PROPOSALS

FOR

CONSTRUCTION OF CONSTRUCTION POWER FACILITIES

NEAR MASSENA, ST. LAWRENCE COUNTY, NEW YORK

SPECIFICATION NO. PA-5-14036

ST. LAWRENCE CONTRACT NO. 7

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of construction power facilities near Massena, St. Lawrence County, New York until 10:30 a.m. Eastern Standard Time on the 17th day of December, 1954 at the Authority's office, 270 Broadway, Room 1207A, New York 7, New York, at which time and place proposals will be publicly opened and read aloud.

The principal items of work are:

1. A 115 KV transmission line, 3-phase, single circuit, approximately 3 miles long on H-frame wood poles. The conductors will be No. 3/0 A.C.S.R. The line will also be provided with a static line which will be installed on top of one of the poles of the H-frame and strung the whole length of the line.
2. Approximately 2.7 miles of double circuit, 3-phase 13.8 KV transmission line on H-frame wood poles. The six conductors for this line will be 336,466 circular mil A.C.S.R.
3. A 115-13.8 KV substation consisting of erection of two 10,000 kva, 3-phase, oil-filled transformers, and necessary bus work, disconnecting switches and fuses for six 13.8 KV, 3-phase circuits. The structure to be furnished by the Contractor for this installation may be either wood or steel.
4. Two 13.8 KV load centers consisting of 3-3-pole, gang-operated pole top mounted load break switches and bus work arranged to receive two incoming 13.8 KV, 3-phase circuits. The structure will be wood.

Plans, specifications and Proposal Forms for the work are on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, after November 26, 1954 upon application and prepayment of a fee of Twenty-five (\$25.00) dollars, no part of which will be refunded.

Bids must be made upon the proposal forms included in the Contract Documents. Each proposal must be accompanied by draft or certified check payable to the order of the Power Authority of the State of New York for the Sum of \$15,000.00.

The right is reserved to reject any or all bids.

W. S. CHAPIN, GENERAL MANAGER

Equipment For Sale

1—Allis-Chalmers HD15 Diesel Crawler Tractor Grader Builder No. 141. Has performed no heavy digging. Only operated approximately 500 hours to compact and control coal storage pile. Priced low for quick sale. Contact W. C. Campbell, Old Ben Coal Corp., West Frankfort, Illinois

STOP that WATER

With FORMULA No. 640

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts cost. Applied quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

HAYNES PRODUCTS CO., OMAHA 3, NEBR.

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112#—500 ton—Des Moines, Iowa
90#—110 ton—Philadelphia, Pa.
65#—62 ton—Harrison, Ark.
80#—60 ton—New Berlin, N. Y.
60#—600 ton—Charleston, S. C.
30#—200 ton—Camden, N. J.
75#—1000 ton—Charleston, S. C.
H. E. Salzberg Co., Inc.—Dept. 104
225 Broadway—New York 7, N. Y.—REctor 2-1890

FOR SALE

Save \$7,000 on \$31,000 Sierra Loader, Model C-30. Thirty-foot conveyor. Excellent condition. Used only one month. Price for quick sale \$24,000. Holmes-Talcott, 599 Franklin Ave., Hartford, Conn.

DECALS

\$7.95 UP TO 25% ON YOUR DECALS

10 DAY DELIVERY

FOR DECALS SEND REPRODUCTION SKETCH OR DECAL YOU ARE NOW USING

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WICHITA, KANSAS

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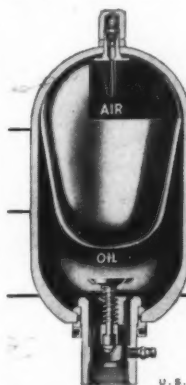
Now... BONUS PROFITS from Your Loader on Every Job!

A Greer Accumulator Assures Faster, Smoother Operation by Reducing Shock on Your Loader

Hydraulic shock and vibration on bucket loaders can make the difference between profit and loss on your construction jobs. Shock usually means increased maintenance, slower loader operation, and operator fatigue.

But now — a simple, low-cost solution to this problem is the Greer Accumulator. This revolutionary new-type shock-absorber takes the bounce and jounce out of your loader.

Actual field tests, successfully demonstrated to leading manufacturers and dealers, have proven the superiority of bucket loaders with a Greer Accumulator over all others.



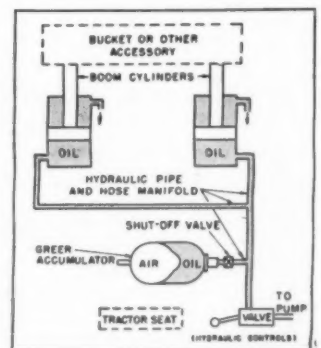
Loader Owners! Benefit These 3 Important Ways!

- 1. INCREASE PRODUCTION!** A Greer Accumulator smooths out loader performance so machine works faster. Gives better return on loader investment.
- 2. CUT DOWNTIME!** A Greer Accumulator absorbs shock that can damage parts and cause structural strain. Less maintenance means less costly downtime.
- 3. STEP UP OPERATOR OUTPUT!** A Greer Accumulator frees operator from tiring effects of jolts and vibration. Lets him work at his full capacity.

How the Greer Accumulator Works. The Greer Accumulator, above, is a steel shell encasing a rubber bag pre-charged with gas. Shock forces hydraulic fluid into shell compressing bag. Thus jolts are absorbed by the accumulator instead of jarring operator and machine.

Simple Installation. Typical loader circuit diagram is shown on right. A Greer Accumulator Tractor Kit only requires a hose and T-connection installed by any mechanic between the control valve and lift cylinders.

Act Now! For complete details on how the Greer Accumulator adds bonus profits to your construction jobs, see your equipment dealer, or write Greer today for more information.



GREER HYDRAULICS INC. • N. Y. INTERNAT'L AIRPORT • JAMAICA 30, N. Y.

MANUFACTURER MEMOS

Milbrath, Engine Designer, Retiring from Wisconsin

One of the leading designers of internal combustion engines, A. F. Milbrath, has retired as vice president and chief engineer of Wisconsin Motor Corp., Milwaukee, Wis.

Mr. Milbrath, 74, has to his credit the design and construction of the T-head engine which powered Stutz Bearcat cars and four-wheel-drive trucks. He also designed Wisconsin marine engines and a line of L-head

and overhead-valve engines which replaced heavy steam engines on excavating machines. This latter line was used on leading makes of power shovels until it was succeeded by diesel power in the thirties.

Gardner-Denver Elects

The secretary and comptroller of Gardner-Denver Co., A. G. Lindquist, has been elected vice president of the Quincy, Ill., company, manufacturer of construction equipment.

Mr. Lindquist, with Gardner-Denver for 16 years, will continue as secretary and comptroller.

Tampo Names New Officers

In reorganizing its executive structure, Tampo Mfg. Co., San Antonio, Texas, has named six employees as executives of the company.

Cleal Falke, formerly works manager, is vice president and general manager. He came to Tampo in 1947 after serving with Huber Manufacturing Co. and Mastic Asphalt Corp.

The company's former eastern district representative, G. T. Worthington, is new sales manager, and Robert Samm is superintendent of shops. Other promotions include J. E. Keppeler to chief engineer, J. D. Allbritton to purchasing agent, and F. Hudson to parts department manager.



The newly elected vice president of Caterpillar Tractor Co., Peoria, Ill., Charles A. Woodley.

Woodley Is Vice President Of Caterpillar Tractor

Charles A. Woodley has been elected a vice president of Caterpillar Tractor Co., Peoria, Ill., manufacturer of earthmoving equipment. In his new post, Mr. Woodley will direct the Caterpillar plants at Peoria, Joliet, and Decatur, Ill.; San Leandro, Calif.; Milwaukee, Wis.; and York, Pa.

Mr. Woodley started working for Caterpillar at the age of 16, and since then has held such positions as general foreman, supervisor, assistant general factory manager, and general factory manager. Last year, he became manager of the Peoria plant.

Appointments at Caterpillar's Peoria plant include that of Lloyd J. Ely as manager, Gordon Swardenski as manager of manufacturing, Gary L. Ice as assistant manager of manufacturing, and Robert E. Gilmore, manager of the engine factory.

At Caterpillar's Decatur plant, now under construction, Paul B. Benner has been appointed chief engineer. He had been assistant chief engineer for the company since last year.

LeTourneau Appointment

Representing R. G. LeTourneau, Inc., Longview, Texas, in the Detroit, Mich., area is John J. House. Mr. House, with wide experience in selling, servicing, and manufacturing heavy equipment, will assist in marketing the new lines of heavy-duty electrically powered and controlled construction equipment manufactured by LeTourneau.

Sales Engineer for Hough

Jim Suter has been appointed sales engineer by the Frank G. Hough Co., Libertyville, Ill. Besides acting as liaison between the sales department and Hough district representatives and other departments, he will be concerned with product improvement and development of the company's line of Payloader tractor-shovels and tractors.

A district representative for four years, Mr. Suter served as assistant sales manager for a Hough distributor prior to his appointment.

Marlow Pumps Appoints

F. R. Paris is the new assistant sales manager for the Marlow Pumps Division of Bell & Gossett Co., Mortons Grove, Ill. Mr. Paris will supervise all district engineers west of the Mississippi River for the Ridgewood, N. J., Division.

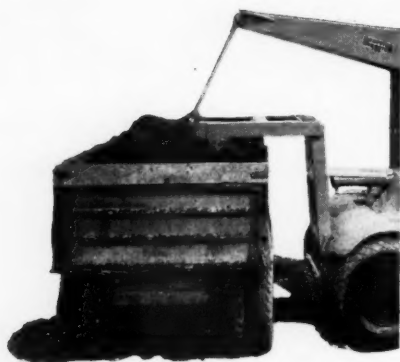
CONTRACTORS AND ENGINEERS

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with the

DEMPSTER DIGGSTER®

GRD-101



The two photos above show some very important advantages you get when you use a Dempster-Diggster GRD-101. Photo directly above shows you why you have no truck shock with a Dempster-Diggster. You can lay bucket in truck body, trip latch and pull bucket up off load. Photo at right above shows you why you get a truck payload with a Dempster-Diggster . . . and how natural and easy it is to do so. This truck is now loaded to maximum heaped capacity, yet Dempster-Diggster has ample clearance. The dumping height is 9'6" and the digging height is approximately 15 feet. This enables the Dempster-Diggster to work with high dump equipment.

Other very important features of the new Dempster-Diggster GRD-101 include: AN EXCAVATOR THAT NEEDS NO



WHEEL TRACTION (loading of bucket is accomplished by the exclusive Hydraulic Crowd and Hoist Action of the Dempster-Diggster) . . . TRUCK-SPEED MOBILITY TO AND FROM JOBS . . . AUTOMATIC BUCKET TRIP . . . MINIMUM TURNING RADIUS . . . THE SHOVEL WITH TORQUE CONVERTER . . . HYDRAULIC STEERING. Here's a shovel

that gives you extra speed on the job and to and from jobs that means extra profits to you! Pound for pound, dollar for dollar, the Dempster-Diggster GRD-101 will out-dig and out-load any other available competing machine in tough going! Let us prove that statement! Write for complete information. Manufactured by Dempster Brothers, Inc.

DEMPSTER BROTHERS

DEMPSTER BROTHERS, 484 Shea Bldg., Knoxville 17, Tennessee

Texas Co. Fills Research And Technical Positions

New appointments of administrative and staff personnel in The Texas Co.'s research and technical department include Dr. Wayne E. Kuhn, general manager; W. A. McMillan, assistant general manager, and Gus Kaufman, operations manager. W. J. Coppoc has been named manager of the research division, and R. W. Hall, manager of the technical services division.

Laboratory appointments include: C. E. Cummings, superintendent of the Beacon, N. Y., laboratories, and C. T. Anne, superintendent of the Port Arthur and Port Neches, Texas, research laboratories.

B. Y. McCarty, C. E. Emmons, and O. P. Puryear have been named regional managers of technical services in the territorial offices of Chicago, Los Angeles, and Houston, respectively. K. L. Hollister is technical representative for the technical services department in Detroit.

Esco Names Two Officers

Electric Steel Foundry Co., Portland, Oreg., has appointed R. W. de Weese vice president in charge of sales, and Jefferson J. Davis, vice president in charge of product divisions.

Mr. de Weese, with Esco for 14 years, has held a number of executive positions in the company. Mr. Davis joined the firm in 1936, and since 1945 he has been manager of its construction equipment division.

Clark Appoints Two

The appointments of Lowell Conrad as director of engineering and Raymond H. Bowman as chief engineer of the engineering section have been announced by the Clark Equipment Co., Benton Harbor, Mich.



Lowell Conrad, Clark's new director of engineering.

Mr. Conrad was formerly the chief engineer for the Michigan tractor shovel line, while Mr. Bowman was until recently chief engineer of the Browning Crane Shovel Co., Cleveland, Ohio.

Colorado Fuel & Iron Renames Four to Board

Alwin F. Franz, Arsene C. Bekaert, Charles R. Tyson, and William M. White were re-elected to three-year terms on the board of directors at the annual stockholders' meeting of the Colorado Fuel & Iron Corp., New York, N. Y.



Ralph W. Gundersen, chief industrial engineer for American Hoist & Derrick Co.

He has been with the company's production engineering department since 1951, and has been in the industrial engineering field for 20 years.

American Hoist & Derrick's appointment is in line with their expansion of plant facilities following resumption of the manufacture of crawler and truck cranes.

Charles G. Hugus Elected As L. B. Foster Officer

The eastern district sales manager for L. B. Foster Co., Charles G. Hugus, Jr., has been elected assistant vice president of the Pittsburgh manufacturing firm. He will continue to maintain his office in New York City,

continuing to direct eastern district sales.

Mr. Hugus has been with Foster, supplier of steel sheet piling and pipe, for 20 years. He was with the company's Pittsburgh office before being appointed eastern district sales manager in 1945.

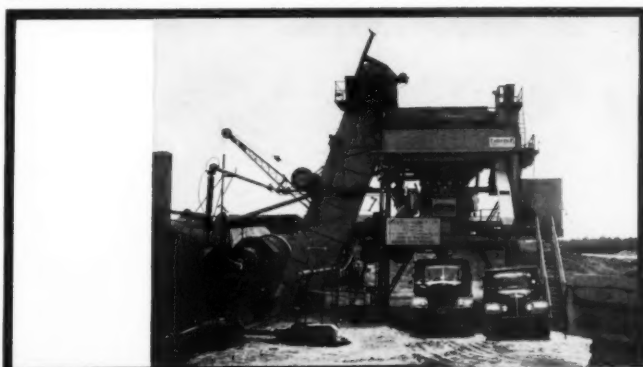
Timken Appoints Director Of Industrial Relations

Now serving as director of industrial relations for The Timken Roller Bearing Co., Canton, Ohio, is Richard L. Frederick. Previously he had been superintendent of labor relations for the company's plant in Columbus.

Succeeding Mr. Frederick at the Columbus plant is Ned N. Case, formerly a project engineer for Timken. Assisting him in his new post is John T. Bonnot.

American Hoist News

The new chief industrial engineer for American Hoist & Derrick Co., St. Paul, Minn., is Ralph W. Gundersen.



Contractors and Engineers
magazine of modern construction

gives you the NATIONAL picture



CONTRACTORS AND ENGINEERS is better geared to give the national picture to distributors because it carries more news of projects and products, more editorial photos, and more advertisers. And C&E alone among the nationals runs a special "Distributor Doings" feature every month.

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Are you yourself and your key salesmen on the route list to review each copy of C&E as it comes in?

Other distributors have found this a good investment. We are confident you will also.



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On the
West Virginia
Turnpike

a D7 with sideboom cuts rocks down to size!



For a tough job on the West Virginia Turnpike, Oman Construction Co., Nashville, Tenn., used a strong-armed Caterpillar team.

The job was to push up a 20-foot-high fill for an underpass. Rock was brought in at the rate of 275 loads a day. But specifications were rigid on the size of rock to be used in the fill.

So Oman put a 5000-pound weight on the sideboom of a pipe layer-equipped CAT* D7 Tractor to break rocks to required size. This is an example of the versatility of these units which can lift many tons with ease. Cat Pipe Layers are essentially mobile cranes which can get in and out of rough ground conditions while carrying loads. There are five models available with lifting capacities up to 83,600 pounds.

In addition to the D7 working with the sideboom unit, Oman had on the job seven DW21s, more than twenty D8s and three No. 12 Motor Graders.

Everywhere along the rugged, mountainous terrain of the 83-mile West Virginia Turnpike contractors had similar Caterpillar-built fleets.

Job-wise contractors know it makes sense to standardize

on Cat equipment. Not only do you have equipment that can handle a variety of jobs without costly down time, but operators and mechanics become familiar with one make. And, of course, you have the advantage of one-stop service from one dealer.

He's the man to see when you have important work coming up. He has field-proven equipment to fit any job. And he'll be happy to prove it—on your job.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.



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YOUR DEALER
WILL DEMONSTRATE

